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CONTENTS.

ALPHABETICAL LIST OF CONTRIBUTORS.

APLIN, O. V., M.B.O.U.

Bank Vole in Oxfordshire, 52;
Range of the Mediterranean
Herring Gull, 58; Ostrich taking
to the water voluntarily, 62;
Notes on the Ornithology of Ox-
fordshire, 1892 and 1893, 91;
Stoats in ermine dress, 148, 223;
Date of arrival of Lesser White-
throat, 153; Cuckoo seen in
March, 190; Eggs of the Tree
Sparrow, 228; Early Cuckoos in
1894, 263; Whimbrel in the Mid-
lands, 266; Marsh Harrier nest-
ing in Oxfordshire, 268; The
autumn song of birds, 410

ARCHIBALD, CHARLES F.

Ring Dove pairing with Domestic
Pigeon, 23; Woodcock breeding
in the Lake District, 188

ARNOLD, Rev. F. H.

Autumnal migration of the Meadow
Pipit, 426

ATKINSON, E. W.

Young Cuckoo reared in a Swal-
low's nest, 340

BARRETT-HAMILTON, G. E. H.

English and Irish Jays, 61; The
Marten in Ireland, 134, 187;
Waxwing near Newmarket, 152;
Polecat in Cambridgeshire, 303

BATTERSBY, Mrs. FRANCES J.

Squirrels destructive in planta-
tions, 148

BAYLY, H. L.

Marten in Co. Wicklow, 394;
Woodcocks nesting in Co. Wick-
low, 430

BLAGG, E. W. H.

Water Vole at a distance from
water, 223

BLATHWAYT, F. L.

Palmed Newt in Herefordshire,
191

BORRER, WILLIAM, M.A., F.L.S.

Cuckoo seen in March, 189

BOULENGER, G. A., F.R.S., F.Z.S.

On the variations of the Smooth
Snake, 10; On the size of the
British Newts, 145

BRADSHAW, GEORGE W.

Uncommon birds in Sussex, 60;
Notes from Hastings, 228; Avoc-
et in Sussex, 346

BROWN, J. A. HARVIE, F.R.S.E.

Albatross at the Færoe Islands, 337

BUCKNILL, J. A.

Cats catching butterflies and moths,
24; Notes from Epsom, 25; Early
nesting of the Heron, 152; Birds
nesting near Epsom, 429

BUTLER, A. G., Ph.D., F.L.S.

Breeding of the Saffron Finch in
confinement, 460

BUTLER, Lt.-Col. E. A.

Cuckoos calling on the wing, 338;
Late nesting of the Goldfinch,
344

CAMBRIDGE, Rev. O. P., M.A., F.L.S.

Early arrival of the Cuckoo in
1894, 224

CAMERON, ALLAN GORDON

The origin and purpose of the horns
and antlers of Ruminants, 241,
281; Cuckoo calling on the wing,
307

CAMPBELL, JOHN M.

White-beaked Dolphin in Kil-
brannan Sound, Arran, 424

CARTER, JAMES

Cuckoo seen in March, 190;
Habits of the Otter, 457

CHAPMAN, ALFRED C.

Habits of the Otter, 108; Short-
eared Owls in Northumberland,
114, 226; Hooded Crow breeding
in Northumberland, 227

CHRISTY, MILLER, F.L.S.

Food of the Otter, 53; On an early
notice and figure of the Great
Auk, 142; Serotine Bat in Essex,
423

CLARKE, WM. J.

Palmated Newt at Scarborough, 191; Blind Gudgeons, 230

CLELLON, R. M.

Little Auk in Co. Sligo, 64

COBURN, F.

Great Grey Shrike in Worcestershire, 21; White Wagtail in Worcestershire, 24; Waxwing in Worcestershire, 24; Red-breasted Snipe in Ireland, 63; Common Scoter in Warwickshire in August, 63; Grey Phalarope in Staffordshire, 112; Swimming powers of the Dipper, 112; Bank Vole in Warwickshire and Worcestershire, 303; Cuckoo calling on the wing, 307; Hooded Crow breeding in Warwickshire, 344; Mealy Redpoll in Worcestershire, 345

CORBIN, G. B.

Variation in the colour of the Fox, 335; Cats catching butterflies and moths, 336; Green Woodpecker pursued by a Sparrowhawk, 340; Montagu's Harrier in Hants, 341

CORDEAUX, JOHN

Lapland Bunting at Flamborough, 19; Bird life in Arctic Norway, 121; Cuckoo seen in March, 224; The Fauna of Lincolnshire, 253

CORNISH, JOHN B.

Lumpsucker at Penzance, 231

DAVIES, SUTTON A.

Ornithological notes from Mid-Hants, 295; Nesting of the Bittern in Hants, 311

DENWOOD, JOHN R.

The Badger, its period of gestation, 186; Woodcock breeding in the Lake District, 187; Nesting of the Dipper, 269; Dimensions of Otter, 423

DILLON, Sir JOHN, Bart.

Food of the Badger, 109; Hen carrying off a Waterhen, 150

DOBIE, W. HENRY

The White Wagtail in Anglesea, 227

DODSON, EDWARD

The size of British Newts, 191

DOUGLASS, G. NORMAN

Contributions to an Avifauna of Baden, 166

DOWLING, J. J.

Marten in Co. Dublin, 149

ELLIOTT, J. STEELE

Nesting of the Sparrowhawk, 24; Swimming powers of the Water Ouzel, 59; Palmated Newt in Worcestershire and Shropshire, 154; Bank Vole in Worcestershire and Shropshire, 223; Osprey in Bedfordshire, 395; Nesting of the Lesser Redpoll in Bedfordshire, 427

ELLISON, ALLAN

Cuckoo seen in March, 189

FLEMING, A. J.

Cuckoo seen in March, 150

FLEMYNG, Rev. WILLIAM W., M.A.

Habits of the Badger, 186; Cuckoo calling on the wing, 308; A visit to Puffin Island, Co. Kerry, 308

FOX, W. STORRS

Buzzard in Derbyshire, 342; Dotterel in Derbyshire, 344

FROWHAWK, F. W.

A list of birds observed at Tooting-Beck Common, near London, 178

GIBBONS, Capt. A. H.

The preservation of African Big Game, 201

GOLDSMITH, H. ST. B.

Uncommon birds in Somersetshire, 21; Early laying of the Cuckoo, 224; Lesser Redpoll breeding in Somersetshire, 228, 265, 304; Shag on Somersetshire coast, 267; Nesting of the Grey Wagtail in Somersetshire, 304; Nesting of the Hawfinch in Somersetshire, 304

GRABHAM, OXLEY, M.A.

Variation of plumage in Cuckoo, 225

GRIFFITH, A. F., M.A.

Baillon's Crake at Brighton, 427; On the attitudes of a Little Bittern in captivity, 454

GURNEY, J. H., F.L.S., F.Z.S.

On the partial assumption by female birds of male plumage, 15, 153; Ornithological notes from Norfolk, 83, 191; Ducks assuming drakes' plumage, 153; Dark variety of the Barn Owl, 226; Razorbills and Puffins cast ashore, 267; On the beak of the Scoter, 292; Black-backed Purple Gallinule in Hampshire, 427

HAGERUP, A. T.

Notes from Greenland, 56

HAIGH, G. H. CATON

Lapland Bunting in Lincolnshire, 61; Wildfowl in Merionethshire, 110; Black Redstart in Kent, 226

HALL, J.

Cuckoo seen in March, 181

HAMILTON, EDWARD, M.D., F.L.S.

Supposed occurrence of the Black Stork in Devonshire, 429

HAMMOND, W. OXENDEN

Snipe affected by soot, 60; Great Snipe in Kent, 429

HART, H. CHICHESTER, B.A., F.L.S.

Cuckoos calling on the wing, 340

HARTERT, ERNST

The migration of Partridges, 18

HARTING, J. E., F.L.S., F.Z.S.

The Otter, 1, 41, 379; Choughs, Crows, and Rooks, 47; Red Grouse in Germany, 55; Barred Warbler in Yorkshire, 58; The Marten in Ireland, 100, 222; An egg of the Great Auk, 108; Hybrid Sparrows, 111, 118, 154; Cuckoo seen in March, 189, 224; Destruction of Martins in Ireland, 222; Variation of plumage in Cuckoo, 225; English records of *Coronella austriaca*, 229; Memorial to Gilbert White, 259; The Indian Antelope—period of gestation, 260; Reported nesting of Marsh Harrier near Oxford, 304; The new Act for the Protection of Birds' Eggs, 179, 321; The Weasel, 417, 445; American Golden Plover, 428; Albino Swallows, 430; The Bergylt, 431; Gestation of the Badger, 458; On the recent occurrence of the Yellow-browed Warbler in Yorkshire and Norfolk, 459

HASTED, ARTHUR W.

Snow Buntings in Co. Kildare, 114; Great Spotted Woodpecker in North Wales, 115; Pied Flycatcher and Grey Wagtail in North Wales, 115; White Robins in Surrey, 150

HERRICK, FRANCIS H.

The reproduction of the Lobster, 413

HORSBRUGH, G. B.

Nesting of the Great Crested Grebe in the North of Ireland, 113; Lesser Redpoll breeding in

Somerset, 265; Large clutches of eggs, 428

JEFFERY, H. J.

Serotine Bat near Hastings, 261

LANGDALE, Rev. H. M.

American Red-breasted Thrush in Leicestershire, 459

LEVINGE, H. C.

Marten in Co. Westmeath, 423

LILFORD, Rt. Hon. Lord, F.L.S.

Barbastelle in Northamptonshire, 187; Cuckoo seen in March, 189; Notes on the Ornithology of Northamptonshire and neighbourhood for 1893, 210; Pheasant nesting in a tree, 266; Barbastelle in Huntingdonshire, 395

LONGRIDGE, Capt. C. C., Assoc. I.C.E.

Continental Oyster culture, 361

LOWE, JOHN, M.D., F.L.S.

Albino Swallow, 430; Small birds and flowers, 271

MACKAY, HUGH

Early Cuckoo in 1894, 263; Whiskered Tern in Dumfries, 268

MACPHERSON, A. HOLTE, M.A., F.L.S.

Hybrid Finches at the Crystal Palace Bird Show, 114; Cuckoo calling on the wing, 306

MACPHERSON, Rev. H. A., M.A.

Lapland Bunting in Sussex, 60; Pink-footed Goose in Dumfriesshire, 114; Waders on the Solway Firth, 115; Little Gull on the Solway Firth, 115; Habits of the Bank Vole, 149; Cuckoo seen in March, 190; Sapphirine Gurnard in the Solway Firth, 230, 270; The Ptarmigan in Lakeland, 326; Greater Spotted Woodpecker nesting in Scotland, 344; Hybrid Mallard and Sheldrake, 396, 427; Bonito in the Solway Firth, 397; Barrow's Goldeneye, 426; The Bergylt off Whitehaven, 431

MATHEW, Rev. MURRAY A., M.A.

Lesser Grey Shrike in Hampshire, 345; Crossbills in Somersetshire, 346; Occurrence of the "Cape Pigeon" at Bournemouth, 396

MATTHEWS, B. ST. JOHN ATTWOOD

Swimming powers of the Water Ouzel, 23

MEADE-WALDO, EDMUND G., F.Z.S.

The Badger, its period of gestation, 221

MILLS, F. H.

Black Rats on ships in port, 186

MORE, A. G., F.L.S.

Supposed occurrence of *Vespertilio murinus* in England—Correction of an error, 148

MURDOCH, G. W.

Woodcock breeding in the Lake district, 112

NEAVE, NEWMAN

Unusual abundance of the Bank Vole in 1893, 109

OGILVIE, F. MENTEITH, M.A., F.Z.S.

Cuckoo calling on the wing, 307

OLDHAM, CHARLES

Mammals of Cheshire, 303

PATTERSON, ROBERT

The Marten in Ireland, 141; Waxwing in Co. Down, 150

PAYNE, J. W.

Cuckoo calling on the wing, 306

PERCIVAL, J., F.L.S.

Grey Plover on the Yorkshire Moors in August, 429

PLAYNE, HERBERT C.

Nesting of the Marsh Warbler near Bath, 304; Lesser Redpoll breeding in Somersetshire, 305; Cuckoo calling on the wing, 306; Ornithological notes from France, 309

PLEYDELL, J. C. MANSEL, F.L.S.

An assembly of Vipers, 25; Green Woodpecker pursued by Sparrowhawk, 58; A brood of white Swallows, 59; Black Guillemot inland in Dorsetshire, 60

POPHAM, H. LEYBORNE

Albatross at the Færoe Islands, 338; Habits of the Herring Gull, 343

PRATT & SONS

Leach's Petrel on the Sussex coast, 25; Wildfowl on the Sussex coast, 60

RAEBURN, HAROLD

Mobbing by Crows, 116; The present status of the Hooded Crow in Southern Scotland, 261; Birds observed in Mid-Wales, 406

RALFE, P.

Uncommon birds in the Isle of Man, 63; A naturalist's visit to the Calf of Man, 161; Sea-bird colonies in the Isle of Man, 386

RAMSBOTHAM, R. H.

Curious accident to an Adder, 64

RAWLINGS, F. C.

A list of birds observed in the district of Barmouth, 328

ROBERTSON, R. S.

Ornithological notes from West Surrey, 110

ROPE, G. T.

Emys lutaria turned out in Suffolk, 311

SALTER, J. H.

Period of incubation of the Sparrowhawk, 341; Nesting of the Dotterel in Lakeland, 343; Unusual number of eggs for the Marsh Tit and Willow Wren, 345

SAPSWORTH, A. D.

The Hawfinch in Epping Forest, 188

SERVICE, ROBERT

The Black Guillemot on the Solway Firth, 55; Mortality amongst Short-eared Owls in Scotland, 57; The Squirrel in the Southern Highlands, 260; Homing instinct in Ferrets, 261; Short-eared Owls in Solway, 264; Great Northern Diver choked by a Gurnard, 265; A bifid worm, 271

SHERIDAN, J. R.

King Eider off Achill Island, Co. Mayo, 151; Surf Scoter off Achill Island, 151; Mealy Redpoll in Achill Island, 152; Buffon's Skua off Achill Island, 152; American Goldfinch on Achill Island, 396

SMITH, J. N.

Cuckoo chased by a Rook, 22; The Crayfish, 65

SOUTHWELL, T., F.Z.S.

Early mention of the Waxwing in England, 62; On the occurrence of the Bearded Seal on the Norfolk coast, 81, 187; Notes on the Seal and Whale Fishery of 1893, 128; Cuckoo seen in March, 189, 262; The Bergylt on the Norfolk coast, 230; *Scorpena dactyloptera* on the Norfolk coast, 431

SPEARS, JOHN R.

The Corbin Game Park in New Hampshire, U.S.A., 203

SPENCE, A. C.

Rabbit breeding above ground, 458

STOTT, C. E.

Snow Bunting at Bolton-le-Moors, 151

SWANN, HENRY K.

Nesting of the Spotted Flycatcher, 59; Marsh Harrier nesting near

- Oxford, 227; Eggs of the Tree Sparrow, 309
 THOMAS, OLDFIELD, F.Z.S.
 Unusual abundance of the Bank Vole in 1893, 54
 TUCK, Rev. JULIAN G., M.A.
 Storm-driven sea-birds, 21; Blood-Olph, a name for the Bullfinch, 22; Wildfowl on the Norfolk coast, 64
 USSHER, W. J.
 Redstart breeding in Co. Tyrone, 306
 WARREN, ROBERT
 Little Auk in Co. Sligo, 20; Great Shearwater in Killala Bay, Co. Mayo, 22; Sand Martins nesting in a ruin, 305; Cormorant choked by a Flounder, 308
 WHITAKER, J., F.Z.S.
 Garganey at Rainworth, Notts, 116; Varieties of the Goldfinch, Greenfinch, Reed Bunting, and Blackbird, 150; Varieties of Rooks, 269; Variety of Waterhen, 270; Curious proximity of nests, 309
 WHITLOCK, F. B.
 The birds of Derbyshire, 110
 WICKHAM, Miss F. M.
 Pheasant nesting in a tree, 227, 266
 WILLIAMS, EDWARD
 American Golden Plover in Ireland, 428
 WILLIAMS, W.
 Turtle Dove breeding with Common Dove in confinement, 64
 WINTON, W. E. DE
 On a neglected species of British Field Mouse, 441
 WITHERBY, HARRY F.
 Woodcocks breeding in the Lake district, 152; Dotterel in Huntingdonshire, 266
 WYKEHAM, Rev. H. W.
 Robin nesting in a church, 269

ALPHABETICAL LIST OF SUBJECTS.

- Adams's Northern Diver, 119
 Adder, curious accident to, 64; *Æpyornis*, remains of, 119
 Africa, South, preservation of Big Game in, 201; English Oysters for, 231
 Albatross in Færoe Isles, 337, 338
Amphithoe littorina, nest in a bottle, 315
 Antelope, Crawshay's, 28; Dwarf, 194; new from Somaliland, 195; Indian, period of gestation, 250; Sable head of, 32; Waterbuck, 33; of Pungue Valley, 119; S. African, 350, figured
 Antlers of Ruminants, origin and purpose, 241, 281; of Fallow Deer affected by removal of testis, 315
 Ants and plants associated, curious examples, 65
 Auk, Great, egg, 108,—early notice and figure, 142; Little, in Co. Sligo, 21, 64,—in Suffolk, 21,—in Isle of Man, 63,—in Norfolk, 90
 Auerhahn, derivation of the name, 177
 Avocet in Norfolk, 86; in Sussex, 346
 Baden, contributions to an Avifauna, 166
 Badger, food, 109; habits, 186; period of gestation, 186, 221, 458
 Bat, Barbastelle, in Northamptonshire, 187,—in Huntingdonshire, 395; Mouse-coloured, correction of error respecting, 148; Serotine, near Hastings, 261,—in Essex, 423
Bedfordshire.—Osprey, 395; Lesser Redpoll, 427
 Beetle, Goliath, 28, 463
 Bergylt on Norfolk coast, 230; off Whitehaven, 431
 Big Game, African, 32, 36, 202, 348
 Bird-life in Arctic Norway, 121
 Birds, female, partly assuming male plumage, 15, 153, 356; small, puncturing flowers to attract insects, 271; sea, storm-driven, in Suffolk, 21; uncommon, in Somersetshire, 21,—in Sussex, 60,—in Isle of Man, 63; of Derbyshire, 110; of Baden, 166; observed at Tooting-Beck Common, near London, 178; Wild, Protection

- Act (1880) Amendment, 179, 321 ; observed in district of Barmouth, 328,—in Mid-Wales, 406 ; autumn song, 410 ; nesting near Epsom, 429 ; of Staffordshire, 279 ; of Isle of Man, 386 ; of West Cheshire, 395 ; of Denbighshire, 397 ; of Flintshire, 397 ; of Rainham, 434 ; of Pembrokeshire, 437
- Bird-skins from Greenland, 56
- Bison heads from Lithuania, figured, 353
- Bittern in Oxfordshire, 93,—in Hants, 302,—nesting in Hants, 311,—in Surrey, 110, 429 ; breeding in confinement, 88 ; Little, in Norfolk, 88,—in Sussex, 454,—attitudes of, observed in captivity, 454
- Blackbird, variety, 91, 150
- "Blood-olph," a name for Bullfinch, 22
- Bonito in Solway Firth, 397
- BOOKS REVIEWED :—
- Horns and Hoofs ; or, Chapters on Hoofed Animals, by R. Lydekker, 31
- Travel and Adventure in South-east Africa, by F. C. Selous, 35
- The Tercentenary Edition of the Complete Angler, or Contemplative Man's Recreation, by Isaak Walton and Charles Cotton, edited by J. E. Harting, 70
- Monograph of the North American Proctotrypidæ, by William H. Ashmead, 76
- The Birds of Derbyshire, by F. B. Whitlock, 78, 110
- Les Coquilles des Eaux Douces et Saumâtres de France, par Ar-nould Locard, 79
- Bird Life in Arctic Norway, by Robert Collett, translated by A. H. Cocks, 121
- Text-book of Zoology, by H. A. Nicholison, 198
- The Partridge, by Rev. H. A. Macpherson, A. J. Stuart Wortley, and George Saintsbury, 199
- Life and Rock, a Collection of Zoological and Geological Essays, by R. Lydekker, 236
- Lost British Birds, by W. H. Hudson, 239
- The Birds of the County Cork, by R. J. Ussher, 240
- Five Months' Sport in Somali-land, by Lord Wolverton, 275
- The Hawks and Owls of the United States in their relation to Agriculture, by Dr. Hart Merriam and A. K. Fisher, 277
- Ornithology in relation to Agriculture and Horticulture, by various writers, edited by John Watson, 278
- The Birds of Staffordshire, with illustrations of local Bird-haunts, by Alexander McAldowie, 279
- The Royal Natural History, edited by Richard Lydekker, with Preface by P. L. Sclater, 316
- British Birds, being Coloured Illustrations of all the Species of Passerine Birds resident in the British Isles, with some Notes in reference to their Plumage, by Claude W. Wyatt, 317
- Alternating Generations, a Biological Study of Oak-galls and Gall-flies, by Hermann Adler, 319
- The Badminton Library : Big-game Shooting, by various contributors, edited by C. Phillippus-Wolley, 347
- Game Birds and Shooting Sketches : illustrating the Habits, mode of Capture, stages of Plumage, and the Hybrids and Varieties which occur amongst them, by John Guille Millais, 354
- The Grouse, by the Rev. H. Macpherson, A. J. Stuart Wortley, and George Saintsbury, 358
- Birds of West Cheshire, Denbighshire and Flintshire, 397
- Notes on the Birds of Rainham, including the District between Chatham and Sittingbourne, by Walter Prentis, 434
- The Birds of Pembrokeshire and its Islands, by the Rev. Murray A. Mathew, M.A., 437
- A Reprint of the 'North American Zoology,' by George Ord, with an Appendix by Samuel S. Rhoads, 466
- Allen's Naturalist's Library, edited by R. B. Sharpe : A Handbook to the Birds of Great Britain, by R. B. Sharpe, 468
- Breeding of Green Woodpecker, Grasshopper Warbler, Common Snipe, Bullfinch, Nightjar, Dab-chick, Lesser Whitethroat, King-fisher, and Mallard at Epsom, 25 ;

- of Turtle Dove with Common Dove in confinement, 64; of Hawfinch and Sandwich Tern in Norfolk, 88; of Red-backed Shrike and Barred Woodpecker in Oxfordshire, 95, 96; of Woodcock in Lake District, 112, 152, 187, 188; of Hooded Crow in Northumberland, 227,—in Warwickshire, 344; of Lesser Redpoll in Somerset, 228, 265, 304, 305; of Long-eared Owl, Tufted Duck, and Stone Curlew in Hants, 298, 299, 300, 301; of Redstart in Co. Tyrone, 306; of Saffron Finch in confinement, 460; of Rabbit above ground, 458
- Buceros melanoleucus*, nesting habits, 233
- Bullfinch, "Blood-olph" a name for, 22,—nest of, with three eggs of Bullfinch and one of Cuckoo, 23,—and Goldfinch, hybrid between, 90; Russian, in Norfolk, 85
- Bunting, Cirl, in Hants, 297,—nesting in Surrey, 429; Lapland, at Flamborough, 19,—in Sussex, 60,—in Lincolnshire, 61,—in Norfolk, 83, 89; Reed, variety of, 150; Snow, great flight of, in Yorkshire, 20,—in Oxfordshire, 99,—in Wales, 113,—in Co. Kildare, 114,—in Lancashire, 151,—in Hants, 302
- Butterflies tamed, 346; and moths, cats catching, 24, 336; with wings of male and female, 117
- Buzzard in Derbyshire, 342,—nesting in Wales, 409; Rough-legged in Norfolk, 84
- Cambridgeshire*.—Varieties of Goldfinch, Greenfinch, Reed Bunting, and Blackbird, 150; Waxwing, 152; Polecat, 303; Otter, 423
- Camel, wild, of Lob Nor, 234
- Capercaillie hen assuming male plumage, figured, 356
- Cats catching butterflies and moths, 24, 336; wild, in Lincolnshire, 257
- Caterpillars mimicking fruit, 463
- Cheshire*.—Bank Vole, 109; Mammals of, 303; Squirrels and Conifers, 336; tamed butterflies, 346
- Choughs, 47
- Cormorant choked by Flounder, 308
- Cornwall*.—Lumpsucker, 231
- Coronella austriaca*, 10; English records of, 229
- Crab, Hermit, figured, 72
- Crake, Baillon's, at Brighton, 427; Spotted, in Hants, 302
- Crayfish, 65
- Crossbill in Norfolk, 89; in Somersetshire, 346
- Crow, variety of, 215; Hooded, breeding in Northumberland, 227,—breeding in Warwickshire, 344,—present status of, in Southern Scotland, 261
- Crows, 47; mobbing by, 116; attacking Short-eared Owl, 264
- Cuckoo chased by Rook, 22; seen in March, 97, 150, 189, 190, 191, 224, 262; early arrival in 1894, 224, 263; early laying, 224; variation of plumage, 225; calling on the wing, 264, 306, 307, 308, 338, 340; young, reared in Swallow's nest, 340
- Cumberland*.—Woodcock, 112, 152, 187, 188; Bank Vole, 149; Badger, 186; Cuckoo, 190; Dipper, 269; hybrid Mallard and Sheldrake, 396, 427; Otter, 423; Barrow's Goldeneye, 426; Bergylt, 431
- Curlew, Pigmy, in Hants, 300; Stone, breeding in Hants, 301
- Cynogale bennetti*, a rare mammal of Borneo, 194
- Derbyshire*.—Birds of, 78, 110; Buzzard, 342; Dotterel, 344
- Devonshire*.—Black Stork, 429
- Dipper in Oxfordshire, 97; swimming powers of, 112; in Northamptonshire, 219; nesting of, in Cumberland, 260; in Hants, 296, 301
- Diver, Black-throated, in Norfolk, 84; Great Northern, choked by Gurnard, 265; White-billed Great Northern, 119
- Dolphin, White-backed, in Kilbrannan Sound, Arran, 424
- Dorsetshire*.—Vipers, 25; Green Woodpecker pursued by Sparrowhawk, 58; White Swallows, 59; Black Guillemot, 60; Cuckoo, 224
- Dotterel in Northamptonshire, 218; in Haddingtonshire, 266; nesting in Lakeland, 343; in Derbyshire, 344
- Dove, Ring, pairing with Domestic Pigeon, 23; Turtle, breeding with Common Dove in confinement, 64,—breeding in Hants, 299
- Duck, Australian, 67; Bimaculated, 85; Eider, on Norfolk coast, 64,—

- off Achill Island, Co. Mayo, 151;
 Long-tailed, in Sussex, 60, — on
 Norfolk coast, 64,—in Wales, 113;
 Pintail and Wild, hybrid between,
 85; Tufted, on Sussex coast, 61,—
 breeding in Hants, 300
 Ducks assuming Drakes' plumage,
 153
 Dunlin, variety, 85
Durham.—Otter, 108
- Eagle, Sea, mobbed by Rooks, 84
 Earthworms, geographical distribu-
 tion of, 29, 195
 Echidna, structure of young, 68
 Egg of Great Auk, 108
 Eggs, wild birds', new Act for protec-
 tion, 179, 321; of Tree Sparrow,
 228, 309; unusual number of, for
 Marsh Tit and Willow Wren, 345;
 large clutches, 428
 Emys lutaria turned out in Suffolk,
 311
Essex.—Otter, 53; Hawfinch, 188;
 Serotine Bat, 423
- Færoe Isles, Albatross, 337, 338
 Falco vespertinus in Oxfordshire, 91
 Falcon, Peregrine, in Somersetshire,
 21; in Oxfordshire, 91; attacked by
 Ravens, 219
 Fauna of Lincolnshire, 253
 Ferret, homing instinct, 261
 Finch, Mountain, and Greenfinch,
 hybrid between, 90; Saffron, breed-
 ing in confinement, 460; Serin, in
 Norfolk, 86
 Finches, hybrid, at Crystal Palace
 Bird Show, 114
 Fishes, Marsipobranch, abnormal, 29,
 —of Mt. Kenia, 68
 Fly, Tsetse, 68
 Flycatcher, Pied, in Wales, 115,
 408; Spotted, nesting of, 59,—
 abundance of, in Northampton-
 shire, 216
 Food of Otter, 53, 108; of Badger,
 108
 Fox killing Short-eared Owls, 57;
 variation in colour, 335
 France, ornithological notes from,
 309
 Frog, movements of, 462
- Gadwall in Norfolk, 84, 86
 Gall-flies, 319
 Gallinago major and Common Snipe,
 hybrid between, 90
- Gallinule, Grey-headed, in Norfolk,
 85; Black-backed Purple, in
 Hampshire, 427
 Game, African Big, 32, 36, 202, 308;
 preservation of, 201; in Corbin
 Park, New Hampshire, U.S.A.,
 203
 Garganey at Rainworth, Notts, 116;
 in Norfolk, 87
 Germany, migration of Partridge in,
 18; Red Grouse introduced into, 35
 Golden-eye, Barrow's, 426
 Goldfinch in Isle of Man, 64,—and
 Bullfinch, hybrid between, 90,—
 variety of, 150,—late nesting of,
 344; American, on Achill Island,
 Co. Mayo, 396
 Goosander on Sussex coast, 61; in
 Northamptonshire, 219
 Goose, Brent, in Sussex, 61,— in
 Hants 302; Pink-footed, in Dum-
 friesshire, 114; Bean and White-
 fronted, hybrid between, 214
 Goniocotena variabilis, specimens of,
 illustrating discontinuous variation
 in colour, 233
 Goshawk in Norfolk, 86
 Grebe, Eared, in Isle of Man, 63;
 Great Crested, in Oxfordshire, 99,
 in North of Ireland, 113,—in North-
 amptonshire, 219,—in Hants, 302;
 Red-necked, in Hants, 300; Sla-
 vonian, in Norfolk, 89,—in Wales,
 113
 Greenfinch, variety of, 150; and
 Mountain Finch, hybrid between,
 90
 Greenland, ornithological notes from,
 56; bird-skins from, 56
 Grouse, Red, introduction into N.W.
 Germany, 55; in Northampton-
 shire, 218
 Gudgeon, blind, 230
 Guillemot driven ashore in Co. Sligo,
 21,— driven ashore in Suffolk,
 21,—caught by baited hook 90,—
 caught in a fishing-line, 302;
 Black, on Solway Firth, 55,—in-
 land in Dorsetshire, 60,—on Nor-
 folk coast, 64, 90
 Gull, Glaucous, 90; Herring, habits
 of, 343; Iceland, in Norfolk, 85;
 Little, on Solway Frith, 115,—in
 Norfolk, 85, 90; Mediterranean
 Herring, range of, 58
 Gulls eating candle-ends, 308
 Gurnard, Sapphirine, in Solway Firth,
 230, 270

- Habits of Otter, 108, 457; of Bank Vole, 149; of Badger, 186; of Herring Gull, 343; of Weasel, 417, 445
- Hampshire*.—*Vespertilio murinus*, 148; Badger, 221; Memorial to Gilbert White, 259; ornithological notes, 295; Bittern, 311; Fox, 335; Cats catching butterflies and moths, 336; Green Woodpecker pursued by Sparrowhawk, 340; Montagu's Harrier, 341; Lesser Grey Shrike, 345; "Cape Pigeon," 396; Black-backed Purple Gallinule, 427
- Hampshire, New (U.S.A.), Corbin Game Park in, 203
- Harrier, Hen, in Norfolk, 84, 89; Marsh, reported nesting of, near Oxford, 227, 268, 304; Montagu's, in Hants, 341
- Hawfinch breeding in Norfolk, 88,—in Epping Forest, 118; nesting in Somersetshire, 304; nesting in Surrey, 429
- Hawks and Owls of United States, 277
- Herefordshire*.—Palmated Newt, 191
- Heron carrying off Waterhen, 150,—early nesting, 152
- Hobby in Northamptonshire, 216
- Hoopoe at Hastings, 228
- Horns of Ruminants, origin and purpose of, 241, 281
- Huntingdonshire*.—Barbastelle, 395
- Hybrid Pheasant, 28; between Turtle Dove and Common Dove in confinement, 64; between Pintail and Wild Duck, 85; between Greenfinch and Mountain Finch, 90; between Goldfinch and Bullfinch, 90; between Bean and White-fronted Geese, 214; between Common Snipe and Gallinago major, 90; Sparrows, 111, 118, 154; Finches at Crystal Palace Bird Show, 114; between Mallard and Sheldrake, 396, 427
- Ireland*.—Little Auk, 20; Great Shearwater, 22; Red-breasted Snipe, 63; Little Gull, 64; Marten, 100, 134, 149, 187, 222, 394, 423; Badger, 109, 186; Great Crested Grebe, 113; Snow Bunting, 114; Squirrel, 148; Heron carrying off Waterhen, 150; Waxwing, 150; King Eider, 151; Surf Scoter, 151; Mealy Redpoll, 152; Buffon's Skua, 152; Sand Martin, 305; Redstart, 306; Cuckoo, 308, 340; Cormorant choked by Flounder, 308; a visit to Puffin Island, 308; Gulls eating candle-ends, 308, 343; American Goldfinch, 396; White-beaked Dolphin, 424; American Golden Plover, 428; Woodcock, 430
- Jays, English and Irish, 61
- Kent*.—Snipe, 60; Crayfish, 65; hybrid Finches, 114; Black Redstart, 226; Great Snipe, 429
- Kestrel pursuing Rabbit, 87
- Knot in Sussex, 61; great flight in Norfolk, 87
- Lake District, Woodcock breeding in, 112, 152, 187, 188; Ptarmigan, 326; Dotterel, 343
- Lancashire*.—Snow Bunting, 151; Woodcock, 188
- Lark, Shore, in Norfolk, 89; Sky, passage of, in Northamptonshire, 215, 219; Wood, in Sussex, 61,—in Oxfordshire, 95,—nesting in Hants, 299
- Larus minutus* in Sussex, 60
- Larva of Sphinx Moth mimicking Tree Snake, 463
- Larvæ of Lepidoptera, influence of environment upon colours of, 232
- Leicestershire*.—American Red-breasted Thrush, 459
- Lepidosiren paradoxa*, 232
- Lincolnshire*.—Lapland Bunting, 61; Cuckoo, 224; fauna of, 253
- Lobster, reproduction of, 413
- Locust at Sierra Leone, 68
- Lumpsucker at Penzance, 231
- Madeira, Mediterranean Herring Gull on coast of, 58
- Mallard and Sheldrake, hybrid between, 396, 427
- Mammals of Cheshire, 303
- Man, Calf of, naturalist's visit to, 161
- Man, Isle of, uncommon birds in, 63; sea-bird colonies in, 386
- Manatee, female and young, 28
- Marten, figured, 73; in Ireland, 100, 134, 149, 187, 222, 394, 423; skull of, 117
- Martin, Sand, nesting in a ruin, 305
- Middlesex*.—Spotted Flycatcher, 59; Cuckoo, 306
- Midlands, Whimbrel in, 266
- Migration of Meadow Pipit, 426; of Partridges, 18

Monmouthshire.—Water Ouzel, 23
 Mouse, British Field, on a neglected
 species of, 441

Mud-fish (*Protopterus annectens*),
 reproduction of, 195

Nest of Bullfinch with egg of Cuckoo,
 23; cf Barn Owl, 87; Goldcrest,
 228; Hawfinch, 228; Peewit, 23;
 Long-tailed Tit, 86; of Robin in
 house, 193; Quail, 217; Song
 Thrush, 299; Amphirhoe littorina,
 315; Swallow, with young Cuckoo
 in, 340; Wasp, 196; curious prox-
 imity of, 309

Nesting of Sparrowhawk, 24; Spot-
 ted Flycatcher, 59; Marsh Warbler
 in Oxfordshire, 95,—in Somerset-
 shire, 304; Quail in Oxfordshire, 98,
 —in Northamptonshire, 217,—in
 Hants, 301; Great Crested Grebe
 in North of Ireland, 113; Heron,
 152; Grasshopper Warbler in
 Northamptonshire, 215, 216; Phea-
 sant in a tree, 227, 266; Horn-
 bill, 233; Robin in church, 269;
 Dipper in Cumberland, 269; Shel-
 drake in Hants, 300; Grey Wag-
 tail, Lesser Redpoll, and Hawfinch
 in Somersetshire, 304; Sand Mar-
 tin in a ruin, 305; Bittern in
 Hants, 311; Dotterel in Lakeland,
 343; Goldfinch, 344; Greater Spot-
 ted Woodpecker in Scotland, 344;
 Lesser Redpoll in Bedfordshire,
 427; Hawfinch and Cirl Bunting in
 Surrey, 429; Woodcock in Lake Dis-
 trict, 112, 152, 187, 188,—Co. Wick-
 low, 430; of Buzzard in Wales, 409

Newt, Palmated, in Worcestershire
 and Shropshire, 154; at Scar-
 borough, 191; in Herefordshire, 191

Newts, British, size of, 145, 191
Norfolk.—"Blood-olph" a name for
 Bullfinch, 22; Wildfowl, 64; Beard-
 ed Seal, 81, 187; ornithological
 notes, 83, 191; female birds assum-
 ing male plumage, 15, 153; Cuckoo,
 189, 262; Barn Owl, 226; Bergylt,
 230; Razorbills and Puffins, 267;
 Scoter, 292; Scorpena dactyloptera,
 430; Yellow-browed Warbler, 459

Northamptonshire.—Barbastelle, 187;
 Cuckoo, 189; Grasshopper War-
 bler, 215, 216; Woodlark, 215;
 ornithological notes, 210; Pheasant
 nesting in tree, 227, 266; Phalarope,
 219; Quail, 217

Northumberland.—Short-eared Owl,
 114, 226; Hooded Crow, 227

Norway, Arctic Bird-life in, 121

Notes, ornithological, from Epsom, 25,
 —from Greenland, 56,—from Nor-
 folk, 83, 191,—from Oxfordshire,
 91, 153,—from West Surrey, 110,—
 from Northamptonshire, 210,—
 from Hastings, 228,—from France,
 309

Nottinghamshire.—Garganey, 116;
 Cuckoo, 191; Rooks, 269; Water-
 hen, 270; Tree Sparrow, 309;
 curious proximity of nests, 309

Ornithological Notes (see Notes)

Ornithoptera paradisea from Finis-
 terre Mts., New Guinea, 197

Osprey in Norfolk, 88, 89; in Bed-
 fordshire, 395

Ostrich taking to water voluntarily, 62

Otter, 1, 41, 379; food of, 53, 108;
 habits of, 108, 457; dimensions of,
 423

Ouzel, Water, swimming powers of,
 23, 59

Owl, Barn, eating Bat, 87; nest of,
 with Rabbit's leg in, 87; variety
 of, 226; Long-eared, in Oxford-
 shire, 92,—breeding in Hants,
 298, 299; Scops, in Norfolk, 84;
 Short-eared, mortality amongst, in
 Scotland, 57,—killed by Fox, 57,—
 in Northumberland, 114, 226,—in
 Solway, 264,—attacked by Carrion
 Crows, 264

Oxfordshire.—Bank Vole, 54; or-
 nithological notes, 91, 153; Cuckoo,
 97, 190, 263; Stoat, 148, 223;
 Marsh Harrier, 227, 268, 334;
 Marsh Warbler on stones, 95;
 Quail nesting, 98; eggs of Tree
 Sparrow, 228; Robin, 269

Oyster culture, Continental, 361

Oysters, English, for South Africa,
 231

Partridge, migration of, 18; variety
 of, 84, 155

Peewit, date of hatching, 93; abun-
 dance of, in Mid-Hants, 296

Peregrine attacked by Ravens, 219

Petrel, Fork-tailed, in Norfolk, 90;
 Leach's, on Sussex coast, 25;
 Storm, in Sussex, 21

Petrels from Kermadec Isles, 29

Phalarope, Grey, in Somersetshire,
 21; in Staffordshire, 112; in Wales,

- 118; in Northamptonshire, 219; in Hants, 302
- Pheasant, Common, variety of, 68; nesting in a tree, 227, 266
- Pheasants, hybrid, 28
- Pigeon, Cape, at Bournemouth, 396; Domestic, pairing with Ring Dove, 23; Wood, large flights of, 85, 91, 210, 218, 220,—killed and eaten by Hawk, 92
- Pintail and Wild Duck, hybrid between, 85
- Pipit, Meadow, flock of, settling in trees, 93; autumnal migration of, 426
- Plover, American Golden, in Ireland, 428; Grey, on Yorkshire moors in August, 429; Kentish, in Sussex, 60
- Plumage, male, partly assumed by female birds, 15, 153; variation of, in Cuckoo, 225
- Polecat in Cambridgeshire, 303
- Porphyrio, Grey-headed, in Norfolk, 85; Black-backed, in Hants, 427
- Proctotrypes, figured, 77
- Ptarmigan in Lakeland, 326; and Grouse, hybrid, figured, 359
- Puffin driven ashore, 21, 84, 90, 267; in Oxfordshire, 96, 99; Island, a visit to, 308
- Quail in Norfolk, 90; nesting in Oxfordshire, 98,—in Northamptonshire, 217,—in Hants, 301
- Rabbit, young, pursued by Kestrel, 87; historical and geographical, notes on, 401; breeding above ground, 458
- Rats, Black, on ships in port, 186; gnawing through leaden pipe, 462
- Ravens attacking Peregrine Falcon, 219
- Razorbill cast ashore, 267
- Redpoll, variety, 90; Lesser, breeding in Somerset, 228, 265, 304, 305,—nesting in Bedfordshire, 427; Mealy, in Achill Island, Co. Mayo, 152,—in Northamptonshire, 220,—in Worcestershire, 345
- Redstart breeding in Co. Tyrone, 305; Black, in Norfolk, 84,—in Kent, 226,—in Sussex, 228
- Redwing, large flock of, 92; variety of, 220
- Reptiles from Mt. Kenia, 68
- Rhinoceros, Burchell's, in Mashonaland, 194
- River-hog of Madagascar, 119
- Robin nesting in a church, 269; nests, abnormal situation, 193; white, in Surrey, 150
- Rooks, 47; varieties, 269; mobbing Sea Eagle, 84; ejecting pellets, 67; law as to, 50
- Ruminants, horns and antlers, their origin and purpose, 241, 281
- Sandpiper, Curlew, in Hants, 300; Green, in Northamptonshire, 216, 219; Wood, in Norfolk, 89
- Scorpena dactyloptera on Norfolk coast, 430
- Scoter, Common, in Norfolk, 85,—in Warwickshire, 63; variation in beak of, 292; Surf, off Achill Island, Co. Mayo, 151; Velvet, on Sussex coast, 61
- Scotland. — Short-eared Owl, 57; Otter, 108; Pink-footed Goose, 114; Squirrel, 260; Hooded Crow, 261; Cuckoo, 263, 306, 307; Dotterel, 266; Short-eared Owl, 264; Great Northern Diver choked by Gurnard, 265; Whiskered Tern, 268; bifid Worm, 271; Greater Spotted Woodpecker, 344
- Sea-birds, storm-driven on Suffolk coast, 21; colonies of, in Isle of Man, 386
- Seal, vision of, 28; Bearded, on Norfolk coast, 81, 187
- Seal and Whale Fishery of 1893, notes on, 128
- Serin Finch in Norfolk, 86
- Shag on Somersetshire coast, 267
- Shearwater, Greater, in Killala Bay, Co. Mayo, 22,—in Norfolk, 85
- Sheldrake in Sussex, 60,—in Northamptonshire, 219,—nesting in Hants, 300,—and Mallard, supposed hybrid between, 396, 427; Ruddy, in Norfolk, 89,—in Hants, 302
- Shrew, Water, piscivorous habits, 65
- Shrike, Great Grey, in Worcestershire, 21,—in Northamptonshire, 210,—in Hants, 295; Lesser Grey, in Hants, 345; Red-backed, breeding in Oxfordshire, 95, 97
- Shropshire. — Cuckoo, 150; Palmated Newt, 154; Bank Vole, 223
- Skua, Buffon's, off Achill Island, Co. Mayo, 152; Pomatorhine, in Somersetshire, 21,—in Norfolk, 84, 90
- Snake, variations of Smooth, 10, 229;

- vertebra of earliest known, from gault of Portugal, 233
- Snakes, Australian, poison of, 313
- Snipe affected by soot, 60, — abundance of, in Sussex, 61; Common and Gallinago major, hybrid between, 90; Great, in Kent, 429; Red-breasted, in Ireland, 63
- SOCIETIES, SCIENTIFIC :—
- Linnean, 26, 65, 117, 155, 192, 232, 271, 462
- Zoological, 28, 67, 119, 157, 193, 233, 273, 315, 463
- British Ornithologists' Union, 235
- Entomological, 29, 69, 119, 158, 195, 235, 274, 431, 465
- Solway Firth, Black Guillemot on, 55; Waders on, 115; Little Gull on, 115; Sapphirine Gurnard in, 230, 270; Bonito, 397
- Somersetshire. — Uncommon birds, 21; Cuckoo, 224, 306; Lesser Redpoll, 228, 265, 304, 305; Shag, 267; Grey Wagtail, 304; Hawfinch, 304; Lesser Redpoll breeding, 228, 265, 304, 305; Marsh Warbler, 304; Crossbill, 346; large clutches of eggs, 428
- Song, autumn, of birds, 410
- Sparrow, Tree, eggs, 228, 309
- Sparrowhawk, nesting of, 24; pursuing Green Woodpecker, 58, 340; period of incubation, 341
- Sparrows damage thatch, 99; hybrid, 111, 118, 154
- Spiders, British Trapdoor, 193
- Spindle, achromatic, in Elasmobranchs, 463
- Spoonbill in Norfolk, 86, 87
- Squirrel destructive in plantations, 148; in Southern Highlands, 260; and conifers, 336
- Staffordshire. — Grey Phalarope, 112; Water Vole, 223
- Stictonetta nævosa, 67
- Stoats in ermine dress, 148, 223
- Stonechat nesting at Epsom, 429
- Stork, Black, supposed occurrence in Devonshire, 429
- Suffolk. — Sea-birds, 21; Bullfinch's nest with egg of Cuckoo, 23; hybrid Sparrows, 111, 154; Cuckoo, 307, 338; Emys lutaria turned out, 311; Goldfinch, 344
- Surrey. — Ornithological notes, 25, 110; white Robin, 150; Heron, 152; birds observed at Tooting-Beck Common, 178; Badger, 186; Cuckoo, 189; Meadow Pipit, 426 birds nesting in, 429; Bittern, 429
- Sussex. — Cuckoo chased by Rook, 22; Leach's Petrel, 25; Lapland Bunting, 60; uncommon birds, 60; Wildfowl, 60; accident to Adder, 64; Cuckoo, 189; ornithological notes, 228; Serotine Bat, 261; Avocet, 346; Meadow Pipit, 426; Baillon's Crane, 427; albino Swallow, 430; Little Bittern in captivity, 454
- Swallows, white, 59, 430
- Swan, Bewick's, in Norfolk, 85; in Wales, 113; wild, in Northamptonshire, 211, 212
- Tern, Black, in Norfolk, 87, — in Northamptonshire, 219; Sandwich breeding in Norfolk, 88, — in Hants, 302; Whiskered, in Dumfriesshire, 268; White-winged Black, in Norfolk, 86, 87
- Thrush, American Red-breasted, in Leicestershire, 459; Missel, killed and eaten by Hawk, 92, — nesting in Hants, 297; Song, nest without mud lining, 299
- Tit, Bearded, in Norfolk, 87; Long-tailed, in Isle of Man, 64, — numerous nests of in Norfolk, 86; Marsh, unusual number of eggs for, 345
- Variety of Marsipobranch Fishes, 29; of Swallow, 59, 430; of Common Pheasant, 68; of Partridge, 84, 155; of Dunlin, 85; of Snipe, 90; of Redpoll, 90; of Blackbird, 91, 150; of Teracolus halyattes, 117; of Goldfinch, Greenfinch, Reed Bunting, and Robin, 150; of Water Vole, 155; of Carrion Crow, 215; of Redwing, 220; of Barn Owl, 226; of Rook, 269; of Waterhen, 270
- Vespertilio murinus (see Bat, Mouse-coloured)
- Vipers, assembly of, 25
- Vole, Bank, unusual abundance in 1893, 54, 109, — in Oxfordshire, 54, — habits, 149, — in Shropshire, 223, — in Worcestershire, 223, 303, — in Warwickshire, 303; Water, variety, 155, — at a distance from water, 223
- Waders on Solway Firth, 115
- Wagtail, Grey, in Norfolk, 86, — in

- North Wales, 115,—in Northamptonshire, 214, 217,—abundant in Hants, 296, 302,—nesting in Somersetshire, 304; White, in Worcestershire, 24,—in Oxfordshire, 93,—in Anglesea, 227
- Wales*.—Dipper, 112; Wildfowl, 113; Greater Spotted Woodpecker, Pied Flycatcher, Grey Wagtail, 115; White Wagtail, 227; birds of Barmouth district, 328; Sparrowhawk, 341; Marsh Tit, Willow Wren, 345; Mid-, birds of, 406
- Warbler, Barred, in Yorkshire, 58; Grasshopper, in Oxfordshire, 95,—meeting in Northamptonshire, 215, 216; Icterine, in Norfolk, 89; Marsh, nesting in Oxfordshire, 95,—in Somersetshire, 304; Yellow-browed, in Yorkshire and Norfolk, 459
- Warwickshire*.—Common Scoter, 63; Bank Vole, 303; Cuckoo, 307; Hooded Crow, 344
- Waterbuck, head of, 33
- Waterhen carried off by Heron, 150; variety, 270
- Waxwing in Worcestershire, 24; early mention in England, 62; in Co. Down, 150; near Newmarket, 152; in Norfolk, 86
- Weasel, 417, 445
- Weir, John Jenner, death of, 184
- Whimbrel in Norfolk, 87,—in Northamptonshire, 216; in the Midlands, 266
- White, Gilbert, memorial to, 259
- Whitethroat, Lesser, date of arrival, 93, 153
- Wild Birds Protection Act (1880) Amendment, 179, 321
- Wildfowl on Sussex coast, 60; on Norfolk coast, 64; in Merionethshire, 113
- Woodcock breeding in Lake district, 112, 152, 187, 188; in Co. Wicklow, 430
- Woodlark, rare in North Hants, 215
- Woodpecker, Barred, breeding in Oxfordshire, 96,—in Hants, 295, 296; Greater Spotted, in North Wales, 115,—nesting in Scotland, 344; Green, pursued by Sparrowhawk, 58, 340
- Worcestershire*.—Great Grey Shrike, 21; White Wagtail, Sparrowhawk, Waxwing, 24; Water Ouzel, 59; Palmated Newt, 154; Bank Vole, 223, 303; Mealy Redpoll, 345
- Worm, bifid, 271
- Wren, Willow, unusual number of eggs for, 345; Wood, in Oxfordshire, 95,—in Hants, 299, 300
- Yorkshire*.—Lapland Bunting, 19; Barred Warbler, 58; Cuckoo, 190, 225, 340; Palmated Newt, 191; Gudgeon, numbers of Blind, 230; Grey Plover, 429; Otter, 457; Rabbit breeding above ground, 458; Yellow-browed Warbler, 459



ILLUSTRATIONS.

PLATE I. THE OTTER, <i>Lutra vulgaris</i> . . .	To face page 1
„ II. THE WEASEL, <i>Mustela vulgaris</i> . . .	„ 417
„ III. ATTITUDES OF LITTLE BITTERN IN CAPTIVITY .	„ 455
„ IV. THE HARVEST MOUSE, <i>Mus messorius</i> .	„ 454
VARIATIONS IN SNOUT OF SMOOTH SNAKE, <i>Coronella austriaca</i>	page 13
HEAD OF SABLE ANTELOPE, <i>Hippotragus niger</i> . . .	32
HEAD OF WATER-BUCK, <i>Coleus ellipsiprymnus</i> . . .	33
HERMIT CRAB IN SHELL OF WHELK ENCRUSTED WITH BARNACLES .	72
THE MARTEN, <i>Martes sylvatica</i>	73
PROCTOTYPES, Latreille	77
FIGURES OF ALCA IMPENNIS, from Seller's 'English Pilot' .	143
BEAK OF THE SCOTER, <i>Edemia nigra</i>	293
BIG GAME ON THE SIRINGETI PLAINS	348
SOUTH AFRICAN ANTELOPES	350
BISON HEADS FROM LITHUANIA	353
HEN CAPERCAILLIE ASSUMING MALE PLUMAGE	356
SUPPOSED HYBRID BETWEEN PTARMIGAN AND GROUSE . . .	357

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The Otter.
Lutra vulgaris.

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THE OTTER, *LUTRA VULGARIS*.

BY THE EDITOR.

FEW animals have been more maligned than the Otter, or more misunderstood. The majority of people know little or nothing of its habits from personal observation, and are under the impression that, as it is a great destroyer of fish, its presence in a trout-stream, or salmon river, is on no account to be tolerated. But "live and let live" is a very wholesome motto, and we shall always maintain that so long as the fishery-laws of this country are respected, and illegal netting is prevented, there will be always enough fish in our rivers for anglers and otters too.

Moreover, it is a fallacy to suppose that the Otter, as stated by Bell in his 'British Quadrupeds,' "lives exclusively on fish." This is by no means the case, as we shall presently show; nor is it the fact that it confines its attention to salmon and trout, despising the coarser kinds. But before treating of its food, it will be proper to say something of its structure, so well adapted as it is to the creature's habits.

In the Otter we find the general organization of the Weasel family specially modified for an aquatic life. The skull shows some approach in form to that of the Seals, being short, oval, broad, and much flattened, with the occipital region strongly developed. Between the orbits it is much compressed, so that the eyes look upwards. The molar-teeth have very sharp tubercles, well fitted to retain their grip of hard-scaled and slippery fish. The limbs are short but powerful, with very flexible joints, permitting every freedom of movement in swimming. The intestine,

as in most piscivorous animals, is of considerable length; in an example examined by Macgillivray it measured 10 feet 10 inches. Externally the head is oval and depressed, with a broad obtuse muzzle, naked round the nostrils, and provided with long stiff whiskers. The ears, provided with a fold of skin which closes them when the animal dives, are short and rounded, almost concealed by the hair. The body is lengthened and depressed, the tail flattened and rudder-like, the toes webbed to the claws. A close coating of fine silky under-fur protects the animal from cold, while the outer covering of close-lying glossy hair presents no resistance in passing through the water. Thus every detail in its structure combines to fit the Otter for its amphibious life, and to enable it to pursue its prey in the water with a rapidity, ease, and grace in which it is only surpassed by the Seals.

There is one peculiarity in its anatomy which has generally escaped observation—namely, the smallness of the gullet. Those who have watched an Otter feeding, as we have done repeatedly, must have noticed that instead of tearing out large pieces of flesh and bolting them like a dog, with very little mastication, it feeds more like a cat, with the head on one side, biting very small pieces at a time, and champing and chewing them well before swallowing. From this point of resemblance “water-cat” would be a more appropriate name for it than “water-dog.”*

The smallness of the animal’s gullet is no doubt correlated with its habit of seizing prey under water. It is thus enabled by muscular contraction to close the gullet while the mouth is open, and so to escape suffocation.

That the Otter is able to remain a long time under water without coming up to breathe, or “vent” as it is technically termed by otter-hunters, is a fact well known to the fraternity.

It is also said to be able to travel under the ice, and an ingenious explanation has been given by an American observer of the mode by which it is enabled to obtain a sufficient supply of air during submersion. He says:†—

“As we all know, there is no air space between the water and the ice, and the Otter cannot draw the air through the ice from above, and does not put his nose up there to cool it. Then what is the explanation? It is

* The name “Water-dog” is given to it both in Ireland and Wales. The Irish call it *Maclaídh uisce*, or *Dobharehu*, and the Welsh *Dyfrgi*.

† ‘Forest and Stream,’ March 14th, 1889.

this, and a very interesting and scientific process, not generally known. The Otter presses his nose against the ice, then exhales the air from his lungs, which forms a flat air-bubble around his nose, and between the ice and water; the air is allowed to remain there a few seconds, and thus by its contact with the ice and water is cooled, purified and re-oxygenated, then the same is inhaled into the lungs, and the Otter is ready for a new start; this may be repeated for a number of times, until the loss and wastage of air requires a new supply. You will at once see the beauty and usefulness of the process. The Beaver and some other animals do the same, to enable them to 'live under the ice a long time, without taking breath.'"

We are not able to confirm this from personal observation, and may remark that upon the only occasion that we know of, when an Otter plunged through a hole in the ice at the side of a lake, it was drowned, and the body was not recovered until the ice broke up. This was a tame Otter belonging to Mr. Assheton Smith, of Vaynol Park, North Wales, which was accustomed to follow its master in his walks. It would hunt a trout-stream for his diversion, coming back when called, like a dog, and was quite accustomed to the lake above mentioned, from which we have often seen it bring out a fish.

Apropos of Otters on the ice, a curious incident happened during a severe frost in December, 1879. A farmer, residing near the river Irfon, a short distance above Llanwrtyd Wells, when walking by the river observed a great commotion in the water close to the edge of some thick ice; on going nearer he found it was caused by an Otter, which, strange as it may appear, was firmly frozen by its tail to the ice. Probably the Otter had been for some time sitting on the edge of the ice in wait for a passing fish, and on plunging in to secure its prey, found itself in durance vile. The poor beast's nails were quite worn to the flesh by scratching against a rock, and its teeth broken by biting the ice in its vain attempt to free itself. The Otter was secured and taken home by the farmer, but died the same night.

That Otters are capable of being tamed and trained there is abundant evidence to show. We might quote Albertus Magnus, Aldrovandus, Gesner, and other ancient writers to prove this, but more modern testimony will be preferred. Every angler will remember the passage in Izaak Walton where "Piscator" expresses a wish to have one of the young Otters which the huntsman had found, and exclaims, "I pray, Sir, save me one,

and I'll try if I can make her tame, as I know an ingenious gentleman in Leicestershire, Mr. Nicholas Seagrave, has done; who hath not only made her tame, but to catch fish, and do many other things at pleasure."

Goldsmith mentions an Otter which would plunge into a pond at word of command, and driving the fish up into a corner, would seize upon one of the largest and bring it to land. Bewick, Shaw, Daniel, Macgillivray, and Bishop Heber (in his 'Indian Journal'),* record instances of the animal's docility in this way; and McDiarmid, in his 'Sketches from Nature,' gives an account of several tame Otters, one of which, belonging to a poor widow, kept her well supplied with fish from the river Urr and its tributary streams. One kept at Corsbie House, Wigtonshire, he says, evinced a great fondness for gooseberries; and another belonging to Mr. Monteith, of Carstairs, though very tame, would steal away at night to fish by moonlight, returning to his kennel in the morning. A cobbler at Rothbury, on the Coquet, had a tame Otter, which was allowed its liberty, and would go off to fish and return to the house, bringing a Trout, after helping himself. He lived about five years, and was then accidentally killed in a gale of wind by a door slamming against him and crushing him.

Our old friend, Mr. F. H. Salvin, of Whitmoor House, near Guildford, has reared and tamed many young Otters, and has proved them to be most delightful pets. He writes:—

"My reason for saying that Otters do more good than harm is that they kill those fish which destroy spawn and young fry, and their presence really indicates an increase of the best fish, such as Trout, Grayling, and Salmon."

As regards the power of the Salmon in ordinary water to escape the Otter by superior swimming, it is certain, whatever the theory upon the matter may be, that the Otter does constantly take Salmon in all sorts of water, as any angler of experience can testify. We have heard of a case in which an Otter was seen in

* Azara gives an account of a South American Otter, *Lutra braziliensis*, which answered to its name, and followed its owner like a dog. See also Jerdon's account of the Indian Otter, *Lutra nair*, in his 'Mammals of India,' and Swinhoe on the habits of a tame Otter, *Lutra Swinhoei*, Gray, which was captured on the island of Gawkwang, near Amoy. Proc. Zool. Soc. 1870, p. 625.

a deep long pool to capture a grilse of 6 lbs. or 7 lbs. weight in the height of the season. Mr. F. H. Salvin once witnessed a struggle between a tame Indian Otter, belonging to Mr. Hulse, of the Rifle Brigade, and a large Pike in a deep pond in Stoke Park, near Guildford. The Pike was eventually beaten, and on being landed was found to weigh 20 lbs. 11 oz., while the Otter weighed but 18 lbs.

"The fish," says Mr. Salvin, "which I find they generally kill are Roach, Dace, Chub, Loach, Miller's-thumb, Jack, and Eels. Many of these fish take to the sides upon seeing their enemy, and he surprises them under the banks, where they fondly imagine they are hidden from view, and consequently safe. I believe they kill a considerable number of Water Rats, and I know they catch Water-hens. I have seen an Otter of mine hunt one like a Spaniel."

We have received confirmation of this from a gamekeeper of Lord Egmont's, as well as from Lieut.-Col. Levett, of Mitford Hall, Stafford, who wrote that in January, 1881, he saw an Otter with a Water-hen in its mouth, with which it dived at his approach, and he subsequently found the spot where the bird had been killed. In hard weather it would seem that Otters are compelled to take other food besides fish, which are then not so easily procured.

Mr. S. J. Hurley, of Killaloe, who has had many tame Otters, wrote in Sept. 1889:—

"You may take my word for it that Otters, when hard pressed for food, do hunt and kill Water-hens, and, indeed, other species of water-fowl as well. On one occasion I even caught an Otter in the act of killing a goose. I had been out one morning fishing in a tributary of the Shannon, and as I turned a somewhat sharp bend in the river, I found Madame *Lutra* tearing the feathers off a goose which she had just killed. I have kept tame Otters for many years past, so know something about them. One beauty that I had used to hunt everything she met with, both on land and in water—fish, feather, and fur. One day, in winter, we were going after the Snipe in the marsh, where it was impossible to work without a retriever. My favourite Irish water spaniel being laid up at home at the time, I could not bring her, but thought I would give Loo (the Otter) a chance of signalling herself. I took her to the marsh, and no spaniel in the world could have performed better. She put up the Snipe splendidly, and retrieved any birds that fell into the big pools or bog-holes."

In Nov. 1885, Mr. Gow, gamekeeper at Dalnaspidal, in Perthshire, came upon the track of an Otter in the newly-fallen snow by the side of a mountain stream. Having his gun with him, he followed the trail in the hope of falling in with the Otter. After proceeding a short distance, the tracks left the water-side, and showed where the animal had made a bound and caught an old cock Grouse. Returning to the stream, it had crossed on to a rock in the centre of the water, where it deposited its prey. To those acquainted with the feeding peculiarities of the Otter, it will not be surprising to learn that it did not finish the bird at its nocturnal meal, but left well-nigh one-half of the Grouse upon the rock. Mr. Gow, after examining the remaining portion of the Grouse, followed the track of the Otter up stream until it terminated in a deep moss-hole, where the object of his pursuit had gone to ground. Having no terrier with him, and as the day was closing, he set to work, and with stones stopped the hole as firmly as the circumstances would admit of. Returning early the following morning with his gun and terriers, he found to his mortification that the Otter had scraped a new hole and escaped, while a fresh fall of snow had obliterated its tracks.

Another correspondent informed us that while walking along the bank of a stream in Scotland, he found the unconsumed remains of a Mallard which had been killed and partially eaten by an Otter.*

Mr. F. H. Salvin reports that Otters also kill and eat Rabbits; and this is confirmed by Mr. T. Speedy, who, writing from The Inch, Edinburgh, 17th Dec. 1885, says:—

“Many years ago, when trapping Rabbits in a hedgerow on the bank of a small, sluggish brook on the Ladykirk estate, I was much annoyed by finding that for several consecutive mornings a number of Rabbits were dragged out of the traps and carried off by some animal. As no traces of either the depredator or the Rabbits were discoverable, I naturally concluded it was the work of some wild animal, but of what sort I could not determine. As there were no fish of any description in the ditch, the idea of Otters never entered my head. Determined to find out the thief, I made an artificial hole in the bank, and set the strongest-springed trap I could find, using a rabbit split up as bait. On the following morning I was not a little surprised to find a large dog Otter secured, which measured 3 ft. 10 in. from point of nose to tip of tail.”

* For further instances of Otters killing Wildfowl see ‘The Field, 31st May, 1873.

As the Otter is amphibious in its habits, it is not unreasonable to suppose that it should feed on rats, voles, and rabbits, more especially when fish are scarce.

Eels are especially liked by Otters, and are easily captured by them. Izaak Walton was of opinion that the Otter can scent them under water, and there appears to be some truth in this. Mr. F. H. Salvin writes, "I know they scent them under water, and bring them up from the mud; indeed, they prefer them to everything." In a subsequent letter he added:—

"Some years ago, when I found that Otters have the power of scenting under water, I used to amuse myself by sinking a fish on a string with a bullet, and after dragging it some distance, I hid it under a stone. Then I turned in the Otter, which soon hit off the scent, and dived beautifully to the spot and brought up the fish. Then I used to take him out in a boat on a pond, and repeat the same thing in very deep water, where I knew the bait would enter the mud at the bottom; but the Otter diving *in circles* (as they always do in deep water) never failed to find and bring it up. In order to show how easily they can take eels, and how much they live upon them, I may relate what an Otter of mine once did in the river Wharfe in Yorkshire. At a turn in the river, below Mr. Scott's seat, Woodhall, the water had formed a sand-bank which did not appear above the surface, but could be plainly seen when the water was clear. Upon arriving opposite this place, the Otter dived directly for the sand-bank, and I could see he intended mischief, for his shovel-shaped head was immediately driven well into the mud, and he came up with such a large eel that it lapped round his thick neck.

"As eels can be scented under water in the mud, their capture becomes all the more certain, for they have no chance to escape by swimming."

In addition to the prey already mentioned, Otters are particularly fond of frogs, which they catch at their spawning-places in spring, and at other times in low-lying damp meadows. Mussels also furnish food to Otters. Numbers of their shells have been found in an Otter's haunt with the ends bitten off, and evident marks of teeth upon the broken fragments, the position of the shells indicating that the Otter, after having crunched off one end, had sucked or scooped out the mollusc in much the same way as those who are partial to shrimps dispose of that esculent crustacean.*

* Harting, 'Rambles in Search of Shells,' p. 38. The Magellan Sea Otter, *Lutra felina*, habitually preys on a large spiny Crab, *Lithodes antarctica*.—Coppinger, 'Voyage of the Alert,' p. 58.

Mr. H. S. Thomas, in his entertaining volume, 'The Rod in India,' 1873, p. 198, writes:—

"The way the Otter has of taking a bite or two out of a fish and then leaving it to catch a fresh one, and thus destroying many more fish than he needs to devour, though against him in a wild state, is certainly a peculiarity to be taken advantage of in a domesticated one; for a mere snack should suffice him, and he would be game to hunt again at once. The heads might very well be spared to the Otter if the rest be kept by the master."

An Otter has been known to seize a Trout which had been hooked, and to break away with it, line and all.*

In 'The Field' of Nov. 14th, 1885, Mr. R. B. Lee gave an account of a tame Otter dying of distemper contracted from an Otter-hound puppy with which it was being brought up. Commenting upon this in a subsequent number (Nov. 28th, 1885), Mr. S. J. Hurley, of Killaloe, wrote:—

"Some years ago a similar instance came under my observation. At the time I refer to I had an adult female Otter, which by months of care and kindness I had brought to the most perfect state of tameness. She used to live in the house, follow me about like a dog, fish in the widest and deepest part of the Shannon, stay out whole nights together with her wild relations, and in the morning, when all the romping and fishing were over, she would return home and scratch at the hall-door for admittance. To my joy, I discovered that she was in young, and, lest any injury should befall her, I resolved to keep her at home by night, and take her out to fish by day. Just about this time I happened to have two brace of Irish setter puppies down with distemper, and one day, while giving them a little gentle exercise in a field opposite my house, the Otter went into their kennel and lay down in the straw. In a few days she showed unmistakable signs of distemper, being attacked in precisely the same way as the young setters, and, in spite of all I could do, she died. I have had several other tame Otters in my time, the greater number of which I obtained when about a month old. Once I got a brace of young ones scarcely a fortnight old, and, as they were very weak, I put them to a foster mother in the shape of a cat, rearing kittens at the time. The plan succeeded, and I had little trouble in taming them. In June last I procured a brace of baby Otters about a month old, and in less than a week they became perfectly tame, and used to follow me about the roads and fields. Before they were two months old they would go into the river at the bridge here, and come out again to a whistle, or call, like a water spaniel.

* 'The Field,' Oct. 16th, 1875.

"Many people are hard on the Otter on account of its fish-killing propensities, but, from long experience, I maintain that they do comparatively little harm in a mighty river like the Shannon. During the last twenty-five years I have heard of only one instance of a spring or summer Salmon having been killed by Otters. I admit that they will sometimes kill a spawned salmon or well-mended kelt in the winter or spring; but what of that? I have many times seen my Otters fish in parts of the river that were full of salmon and trout, and yet they would be satisfied with an eel."

One of the most remarkable incidents in the life of an Otter occurred in the case of a tame one that learned to hunt one of its own species. Mr. J. Davison, of Andover, has given the following account of it in 'The Field':—

"One Sunday afternoon, taking a walk down by the Thrum Mill, near Rothbury on the Coquet, to exercise our dogs, on getting to the top of the rocks one of the puppies gave tongue, and out came an Otter with two whelps by her side, making for the river. We got in front, when the mother gained the rocks; but we secured the two whelps. We took them home, and put them with 'Bell,' an otter-hound, who had a litter of three puppies. One of the whelps died, but the other took to the hound, and throve famously; he mixed with the puppies, but fought like a demon, and was soon master of the situation. Wherever they went he went with them, fighting everything that he met with. He also became a pet with all the householders, who never missed a chance of feeding him. His special treat was bowls of milk and broth; to get these he would find his way into dairies, larders, &c. Thus he went on, until we had to enter the puppies for otter-hunting. We had him fastened in a yard with high walls, as we felt sure, if we took him with us, he would join his own species. On our return he bullied and fought the entire kennel of five. About a week after I had to go to Brinkbarn Priory, and took the dogs with me. 'Sandy,' the tame Otter, would go, and into the Coquet they soon got on the lair of an Otter. They swam him through a deep pool, when he took to the bushes. Soon I saw 'Sandy' side by side with 'Rufus,' close to the wild Otter. I said farewell to 'Sandy,' but presently I heard the pleasant sound 'worry, worry.' I thought 'Rufus' had him, but on coming in sight, to my astonishment, 'Sandy' had him fast by the neck, and held him till the dogs came up. From that time he was the leader in all our hunts, and was in at the death of nearly twenty Otters. But, alas! poor Sandy soon came to his end. Love of broth led him into the larder of the Star Inn. The cook, finding him wallowing in the broth, struck him with the wooden ladle—more to frighten than to hurt him; but his skull was fractured, and, after lingering for some days, he died, to the inexpressible regret of all who knew him."

We must reserve for another occasion some remarks on variation, measurements, and weight; and on the much-vexed question of the period of gestation, and the season of reproduction.

(To be continued.)

ON THE VARIATIONS OF THE SMOOTH SNAKE, *CORONELLA AUSTRIACA*.

By G. A. BOULENGER.

THE first record of the Smooth Snake, *Coronella austriaca*, Laur. (*C. lævis*, Lacép.), as a British species, was published by the late Dr. J. E. Gray in this Journal in 1859 (p. 6730), from a specimen obtained at Bournemouth, and presented to the British Museum by the late Lord Arthur Russell. In the same volume the late Mr. F. Bond (p. 6787) informed the readers of 'The Zoologist' that he had, some years previously, discovered the snake near Ringwood.* There is yet an earlier claim to its discovery in Britain, which must, however, be dismissed as based on an error. A small snake figured by Sowerby (Brit. Miscell. pl. iii. 1804) as *Coluber dumfriensis*, and stated to have been caught by a Mr. Simmons near Dumfries, has been regarded as belonging to this species, and the name *C. dumfriensis* appears in most of the recent synonymies of *Coronella austriaca*. The specimen has not been preserved, but I am fully convinced that Sowerby's figure is taken from a young bleached specimen of *Coronella doliata*, L., a North American species.†

Since 1859 numerous instances of the occurrence of *Coronella austriaca* in Hampshire and Dorsetshire have been recorded in 'The Zoologist' and 'The Field.' The specimen obtained by Lord Arthur Russell has been figured in Cooke's 'Our Reptiles,' pl. iv., and another figure, accompanied by a most interesting

* The Rev. O. P. Cambridge, who accompanied Mr. Bond on that occasion, kindly informs me that the exact spot where the first specimen was caught is near the St. Leonard's public-house, Ringwood Heath, just within the borders of Hampshire.

† *Coluber tetragonus*, Latreille, introduced by Fatio in the synonymy of *Coronella austriaca*, I regard as identical with the South African *Homalosoma lutrix*.

account, has been given by the Rev. O. P. Cambridge in the 'Proceedings of the Dorset Natural History Club' (vii. 1886, p. 84, pl. vi.). But no special attention has as yet been paid to the variations among British specimens.

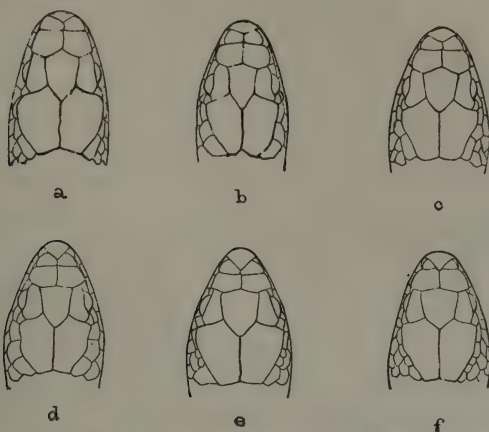
One of the most important characters for the distinction of *Coronella austriaca* from its European congener, *C. girondica*, resides in the shape of the rostral shield, the depth of which is much greater in the former, so that a considerable portion of it, forming a triangular area, is bent back on the upper surface of the snout. In the typical *C. austriaca* (of which several specimens from the original locality, viz. the environs of Vienna, are in the British Museum), the upper portion of the rostral measures about half its distance from the frontal shield; whilst in the form which predominates in Italy and Sicily, and which has been named *Zacholus fitzingeri*, Bonap., and *Coronella italica*, Fitz., the snout is more pointed, projects more beyond the mouth, and the upper portion of the rostral equals at least two-thirds its distance from the frontal. The difference between extreme specimens of the two forms is very striking, whether the head be examined from above or in profile, and a *C. fitzingeri* is more suggestive of a *Simotes* or *Rhinechis* than of a typical *Coronella*. But there is an almost complete transition between the two extremes, and most recent authors have been content with distinguishing them merely as varieties or subspecies.

That this form with prominent snout is not confined to Italy was first pointed out by Schreiber (Herp. Eur. p. 308, 1875), who states that he has examined specimens from the Pyrenean Peninsula (no precise locality mentioned) which agree in every respect with the Italian ones. I may add that the only Portuguese specimen I have ever seen, obtained near Coimbra by M. Paulino d'Oliveira, and preserved in the Brussels Museum, belongs to that form; likewise two specimens from N.W. Spain (Corunna and Pontevedra), which I have since received from M. V. L. Seoane. Not long ago Dr. F. Werner (Verh. Zool. Bot. Ges. Wien. xli. 1891, p. 764) recorded the occurrence of individuals of the var. *fitzingeri* near Vienna, and he has been so kind as to send me four for the British Museum. Two of them are particularly remarkable in showing a still greater development of the rostral shield, which reaches the prefrontals, entirely separating the internasals. (See p. 13, fig. f).^e

It is probable that if greater attention were paid to individual variations of this widely-distributed snake, many more new localities for the var. *fitzingeri* would be brought to light. In fact, I am now able to point out its occurrence in England. A small specimen, 330 millim. long, was caught by Master J. L. Monk on August 21st last in Talbot Woods, Bournemouth, and kindly presented by him to the British Museum. In this specimen the rostral is wedged in far between the prefrontals, which form but a very short median suture, and the length of its upper surface exactly equals its distance from the frontal. In the specimen received from Lord Arthur Russell, the upper portion of the rostral measures three-fifths of its distance from the frontal, and in that presented by Mr. Bond one-half; the snout is also more obtuse, and both pertain unquestionably to the typical form. On examining some specimens, three in number, from Hampshire, received from the Zoological Society, I find that they are referable to the var. *fitzingeri*; the upper portion of the rostral in one measures two-thirds its distance from the frontal, whilst in the two others it equals that distance. I must therefore conclude that the character on which *C. fitzingeri* is based, which I may add is not correlative of any other either in the lepidosis or in the coloration, is merely an individual one, more frequent in some localities than in others, but by no means geographically limited, as was hitherto believed to be the case. Prof. Camerano, in his recent Monograph of the Snakes of Italy (Mem. Acc. Torin. xli. 1891), refers all the Italian specimens to his subspecies *fitzingeri*. But a young specimen from Bologna in the British Museum, received from Prof. Bianconi, belongs to the typical form, the upper portion of the rostral being only half as long as its distance from the frontal, and the shape of the snout not differing from that of the form described by Laurenti as *C. austriaca*. I should add that I have considered the question whether the aberrant specimens from Hampshire might not be the result of some importation from southern parts of the Continent; specimens thus brought over for sale in Bournemouth might have been ultimately turned loose in the neighbourhood by their owners and recaptured, as sometimes happens in London, where snakes are occasionally taken in the public parks. I therefore wrote to Mr. A. Green, the well-known naturalist in Bournemouth, to inquire whether any of the snakes he sells were ever received

from the Continent. His answer was that he had never imported any *Coronellas*, and that there is no one else in Bournemouth who deals in Reptiles in any way.

The following figures show the amount of variation in the shape of the snout, and the size of the rostral shield in six specimens:—*a*, *b*, and *f* from Austria; *c* and *e* from Hampshire; and *d* from Piedmont.



The number of scales across the middle of the body is invariably 19. The number of ventral shields varies from 153 to 199; the anal is nearly always divided, but I find it entire in one specimen from Travnik, Bosnia; the number of ventral shields varies from 42 to 70 pairs. The following are the numbers of ventrals and subcaudals in the seven British specimens examined by me:—

♂.	Bournemouth.	A. Russell.	V. 158.	C. 61.
♀.	"	J. L. Monk.	" 165.	" 48.
♂.	Ringwood.	F. Bond.	" 154.	" 58.
♂.	Hampshire.	F. Beckford.	" 154.	" 56.
♂.	"	Zool. Soc.	" 153.	" 57.
♂.	"	"	" 163.	" 54.
♀.	"	"	" 177.	" 55.

In his well-known paper on the scale-pits of snakes (Vidensk. Meddel. 1860, p. 209; German translation in Arch. f. Nat. 1861, p. 127), Reinhardt states that the pits are single in *Coronella austriaca*, and this has even been given as a diagnostic character of the genus *Coronella* by Cope (Proc. Amer. Phil. Soc. xxiii. 1886, p. 487). I have examined a large number of specimens

and always find at least a few of the scales with two pits; whilst some specimens may even have most of the scales with two, as, amongst others, the specimen found near Bournemouth by Master Monk.

The Smooth Snake rarely exceeds the length of two feet. The largest specimen in the British Museum measures 28 inches (720 millim.). The startling record of a Danish specimen over 4 ft. long (1280 millim.), by Sarauw (Nat. og Mennesk. Copenh. x. 1893, p. 216), is possibly based on some exotic specimen escaped from confinement, the more so as the number (218) of its ventrals is outside the known range of variation of *C. austriaca*. This species is ovoviviparous, and the young at birth measure 5 to 6 inches.

The upper parts are brown, yellowish, or reddish, often with one or three more or less distinct lighter stripes, and with small dark brown, blackish, or brick-red spots usually arranged in pairs, or forming ill-defined cross-bars; frequently two dark stripes on the nape, usually confluent with a large dark brown or black blotch on the occiput; a dark brown or black streak runs along each side of the head, from the nostril to the angle of the mouth, passing through the eye, sometimes extending along each side of the neck. The belly is often brick-red or orange in the young, usually reddish or purplish brown or lead-grey in the adult, uniform or speckled with blackish or whitish.

A remarkable male specimen (480 millim. long), obtained between Kierling and Weidling, near Vienna, has been sent to me by Dr. Werner. Its snout is remarkably short and broad (see p. 13, fig. *a*), the opposite extreme to the var. *fitzingeri*; the frontal shield is much longer than its distance from the end of the snout. The snake is pale brown above, with four blackish parallel fine lines along the anterior fourth of the body, the median pair enclosing large reddish brown black-edged spots forming more or less regular bars, these markings producing the ladder-pattern well known in the half-grown *Rhinechis scalaris*. The belly is red dotted with black, the lower surface of the tail with a black spot in the middle of each subcaudal shield. The specimen is further remarkable in having two small yellowish, dark-edged spots close together on the back of the head, separated by the suture between the parietal shields.

The only notice of melanism in *Coronella austriaca* is to be

found in an appendix to Mr. Cambridge's paper (Proc. Dorset Nat. Hist. Club, vol. vii. p. 91), where Mr. William Penney, of Poole, is stated to have found near that place two specimens of a black variety.

ON THE PARTIAL ASSUMPTION BY FEMALE BIRDS OF MALE PLUMAGE.

By J. H. GURNEY, F.L.S., F.Z.S.

THIS is an interesting subject, and one which has engaged the attention of such naturalists as John Hunter, Darwin, and Yarrell, whose paper read before the Royal Society is classical.* In the last number of 'The Zoologist' (1893, p. 458), Mr. Coburn has referred to the case of a female Merganser, *Mergus serrator*, assuming male plumage. A similar case came under the notice of my late father. He proved by dissection that a supposed young male Merganser, showing a considerable amount of black plumage about the head and neck, was a female. Such cases as these indicate that the change is not a result of semi-domestication, although the likelihood of the metamorphosis is increased by domestication, as demonstrated in the cases of the hen, duck, and pheasant.

It would be interesting to ascertain what species among the *Anatidæ* have exhibited this abnormal tendency. Four may be named:—the Mallard, *Anas boschas*, the Wigeon, *A. penelope*, the Tufted Duck, *Fuligula cristata*, and the Scaup, *F. marila*. The Rev. H. A. Macpherson, in his 'Study of British Birds' (pp. 71, 72), is my authority for the Tufted Duck, and the late Edward Blyth for the Scaup. The normal adult plumage of a female Scaup is a white face and brown head and neck turning sooty black (A. C. Chapman, Zool. 1887, p. 8). The female bird figured in Dresser's 'Birds of Europe' is not adult.

The late Mr. Cecil Smith remarked this masculine change in a female Wigeon ('Ibis,' 1888, p. 228), and it has been noted not unfrequently in the ordinary Wild Duck, *A. boschas*, in England, with one exception (Birds of Northumb. and Durh.,

* Phil. Trans. 1827, p. 268—275. See also a paper by him on the assumption of the male plumage by the female of the common Game-fowl, Proc. Zool. Soc. 1831, p. 22.

p. 152), always in a domesticated state. These ducks sometimes live to a great age. My father had one which was believed to be twenty-nine years old, and I have another, in perfect male attire, believed to be now ten years old: this is the same bird which a decoy-drake treated as a veritable male and bullied, while his own mate looked placidly on. The Tufted Duck mentioned by Mr. Macpherson was twelve years old.

In passing, it may be remarked a ready way which may be adopted of ascertaining the sex of Mergansers, which I have tried in Leadenhall Market, is by passing the finger and thumb down the neck and feeling for the enlargement of the trachea. But such a test would be of no avail in the Wigeon and Tufted Ducks.

Mr. Coburn does not state that the ovary of the Merganser examined by him was diseased, and in my father's specimen there was no sign of disease, so probably they were both healthy birds. The diseased condition of the ovary which is sometimes presented in a hen Pheasant may be seen in Yarrell's illustration on page 103 of vol. iii. of his 'British Birds.' Yarrell, it will be remembered, was of opinion that disease always accompanied the change of plumage; but birds may recover from disease with or without any resumption of the normal colour; a hen Pheasant of this description, which was caged by my father, recovered its ordinary female plumage. Again, there may be a diseased condition of the ovaries without any indication of it by a change of plumage.

It would be interesting to know whether, after this change of plumage, the *Anatidæ* are capable of laying fertile eggs. Gallinaceous birds almost always become barren, but apparently some Passerine birds do not, such as Redstarts and Red-backed Shrikes, though there does not appear to be any ascertained cases of their having reared young.

There is a recorded instance, and only one, so far as I am aware, of a domestic hen in cock's plumage producing young. This is mentioned in 'The Field' of Nov. 1st, 1884. This seems to be the only incontestable instance of any female bird in male plumage having young ones—or perhaps I should say recorded instance of what may occasionally happen and nevertheless escape notice.

I have seen certainly four, if not five, female Redstarts

assuming male plumage, but none of them had completed the change. Blyth wrote that he had detected similar examples by their smaller size ('Field,' June 17th, 1871), adding that the feathers are overlaid with dingy tips, as in newly-moulted males in autumn. But those which I examined wanted the freshness of colour of a young male Redstart or a newly-moulted adult, and though they laid eggs there is no evidence that the eggs were fertile.

In 1886 I exhibited a series of Redstarts to the Norwich Naturalists' Society, including one of those anomalous females, and described its plumage. The most noticeable feature about it was the throat, which had not the pretty mottling of a young male, neither had it the pure black of an old male; its hue was grey, a little darker than the back of an ordinary adult male Redstart. The white forehead was slightly shown, but the breast, though much redder than a female's, had not half the depth of colour of an adult male's.

In 'The Ibis,' 1888 (p. 229), a list is given of twenty-four species of birds, in which one or more instances of a female assuming male plumage are recorded. To make it complete the following should be added, making thirty-three species, referable to five families, or thirty-five if the Woodchat and Golden Oriole are included: of these seven have been figured, but no Passerine bird among them, which is to be regretted, as the transformation is characteristic in *Ruticilla* and *Lanius*:—Montagu's Harrier ('Ibis,' 1875, p. 222); Bearded Titmouse ('Field,' Sept. 14, 1872); Cirl Bunting (Bull. Soc. Zool. France, ii. p. 23); Black-headed Bunting, *E. melanocephala* (ditto); Crossbill ('Naturalist,' 1889, p. 52); *Pyranga æstiva* (Audubon, Orn. Biog. v. p. 518); Summer Tanager ('The Auk,' 1891, p. 315); Macaw ('Gentleman's Magazine,' 1785, pp. 782, 959); and Tufted Duck (Macpherson, Brit. Birds, pp. 71, 72).

There is no bird which demonstrates this metamorphosis so often as the Common Pheasant, as sportsmen know well. It is pretty frequent in the Capercaillie, and Black Grouse also, though more so in the former, according to Mr. Millais ('Game Birds,' p. 40), and examples occasionally turn up in Leadenhall Market, but in the Pheasant it is very common. While making these notes (Dec. 13th) I shot one, and saw another the previous week; a quick eye can detect them even when running about.

20344

Mr. Gunn, of Norwich, among the many which have passed through his hands, has never seen one so perfect that it could not be distinguished from a cock. Neither have I, save in the single instance of the one mentioned in the 'Transactions of the Norfolk and Norwich Naturalists' Society' (iv. p. 184), and that was a perfect plumaged cock Pheasant without spurs; but the sex may not have been, and probably was not, ascertained with certainty. Nevertheless, if a female Duck and a Chaffinch can attain the perfect masculine garb, why not a Pheasant?

Mr. Gunn has one which comes very near to perfection, but the black chest-spots and breast-markings are smaller, and the tail not so long as that of the cock.

In Mr. Millais' beautiful 'Game Birds,' already referred to, there is a plate of an adult Black cock assuming the plumage of the Grey hen. A similar instance is given of a Barn-door cock figured in Mr. Tegetmeier's 'Poultry Book' (p. 133). Such cases, however, are of extreme rarity.

NOTES AND QUERIES.

BIRDS.

The Migration of Partridges.—In 'The Zoologist' (1893, p. 433) a correspondent enquires whether Partridges are known to migrate, from which I conclude that the occurrence of the so-called "Zughühner" (*i. e.* "wandering partridges") in North Germany is not so generally known in England as in Germany, where almost every educated forester and hunter has at least heard of it. It may therefore be of interest to the readers of 'The Zoologist' to supply a few notes on the subject. In the northern parts of Germany large flocks of Partridges were noticed by a number of observers to appear suddenly in autumn or winter, and to disappear again before the breeding season. They were also seen in packs of from fifty to at least five hundred, always kept close together, and could not be dispersed. They strayed restlessly over the fields, were extremely shy, and were difficult to shoot. These wandering Partridges are said to be distinctly smaller, greyer than the common German Partridge, and to have darker feet. I met with such Partridges once. When shooting with my father in the long lyme-grass, *Elymus arenarius*, behind the sand-dunes on the Baltic in East Prussia, and following some single Partridges, we saw, to our surprise, more than two or three hundred birds get up some hundred yards

in front of us. Being by ourselves we tried to follow them, but they were so shy that we could not get a single shot, and they were soon out of sight and never seen again. I know of others who were fortunate enough to procure one or two of such birds, but I have never examined a specimen myself. The "Zughühner" apparently belong to a different race, and must not be confounded with the well-known large grey Russian bird which is brought to the London market in enormous quantities. Naumann, the great German ornithologist, wrote:—"Partridges are stationary birds, straying about under certain circumstances only. The majority never leave the neighbourhood of the place where they are hatched, though exceptionally, if much disturbed and short of food, they will stray away for a time, but to a short distance only, returning as soon as circumstances are more favourable. In North Germany, however, by the end of October or in November, foreign Partridges appear, coming apparently from northern countries, and driven from their home by severe weather, cold, and want of food, to seek this and shelter in our comparatively milder climate. Sometimes they do not forsake our fields before the early spring. These Partridges, called "Zughühner" by German sportsmen, seem to be smaller than ours, perhaps because they are natives of a more barren country. They do not differ, however, in colour and markings, except in the slightly darker colour of the feet, and there is no difference in their note and habits, except that they keep together in immense packs and that they are exceptionally shy. They often appear in parts of the country where there were no Partridges before, and in flocks of from fifty to a hundred. One of my brothers once saw a pack of perhaps five hundred wandering along very hurriedly, half on the wing, half running, in a direction from east to west, and covering a narrow track for a distance of perhaps three hundred yards. They were constantly moving onward, all in the same direction, those in the rear flying over those in front, and so quickly that all disappeared out of sight within a few minutes." Naumann then details his reasons for not considering these Partridges to be of a distinct species. A comparison, nevertheless, of a number of specimens of these migratory birds would be very desirable at the present day, when the study of local forms is far more advanced than it was sixty years ago, when Naumann wrote the sixth volume of his immortal work.—ERNST HARTERT (Zoological Museum, Tring).

[Some pertinent remarks on this subject have lately been published by Mr. H. A. Macpherson in a volume on the Partridge issued by Messrs. Longman in their so-called "Fur and Feather" series. Of this volume we hope shortly to give a notice.—ED.]

Lapland Bunting at Flamborough.—Mr. Matthew Bailey having sent word that he had several times seen a flock of from sixty to eighty Lapland Buntings near Flamborough village in the second and third

weeks in November, on the 21st of that month, when staying at Flamborough, I accompanied him to the spot, and after a little search found them on a barley stubble. This field, which had all the appearance of bad cultivation, was much frequented by small birds for the sake of the various seeds of weeds to be found there. There was a flock of about one thousand Snow Buntings, besides droves of the common Sparrow, Chaffinches, Greenfinches, and others. It is surrounded by rough unkept hedges. The Lapland Buntings, like the other birds, were on the stubbles, but flew up in rather close a body to the hedge, and then began directly to drop by twos and threes to the stubble. On our moving a few steps they again took to the hedgerow, and this sort of thing was repeated while we remained. I should say that Mr. Bailey's estimate of sixty to eighty was very near the number we saw then, although on subsequently visiting the place later in the day I calculated the flock at one hundred to one hundred and twenty. When on the hedge they were very favourably placed for examination through the glass. Like Snow Buntings, they show considerable diversity of plumage. The flock was a mixed one, males and females, and probably also young; the males had the black parts much broken and mottled, and amongst them were several Linnets and three very bright Siskins. In their flights between the stubble and hedge the grey markings on the wings and outer tail-feathers afforded a very distinguishable feature, and they appeared to me to spread their tails considerably more than do some small birds, recalling in this respect the flight of the Crested Lark, which I have seen in Germany. They might easily be passed over for Tree Sparrows, having exactly the same habit of crowding a hedgetop and straggling down to the stubble to feed, and on the least disturbance all flying up in a body. Mr. Bailey told me that on one occasion, on the road between Flamborough village and the lighthouse, the whole flock dropped from the hedge to the footpath about twenty yards before him. During the day I saw two or three with Snow Buntings about a shallow pool in a field, one of these being on the floating weed. I also saw, on Nov. 22nd, a "Leaf-warbler" like a Chiffchaff on the side of a plantation hawking for flies.* It is a curious fact that during the hurricane from the north on the 19th, several Terns were seen near the extreme point of the headland. Immense flights of Snow Buntings came in at Flamborough in the same week as the Lapland Buntings, and I saw many large flocks on the stubbles there during my visit.—JOHN CORDEAUX (Great Cotes, R.S.O., Lincoln).

Little Auk in Co. Sligo.—When walking on the Enniscrone Sands, on Nov. 19th, I picked up the remains of a Little Auk, *Mergulus alle*, destroyed by the Gulls. It was in a perfectly fresh state, however, and

* This was not a Chiffchaff; it had a distinct bar on the wing.

had evidently come ashore but a few hours previously. Along the same sands I also found several Puffins, Razorbills, and Guillemots, all driven ashore by the N.W. gale of the two previous days.—ROBERT WARREN (Moyview, Ballina).

Storm-driven Sea Birds.—After the terribly destructive gales of Nov. 19th and 20th, a Storm Petrel was picked up at Livermere, near Bury St. Edmunds, and an adult Puffin within the limits of the borough, which is nearly forty miles from the sea. The latter bird was alive and well when found, and was taken to Mr. Travis, the Bury taxidermist, who kept it alive for a week, but it refused to touch either fish or flesh. The Puffin is a far more uncommon bird in Suffolk than the Little Auk; the late Mr. N. F. Hele, in his 'Notes about Aldeburgh,' was only able to record the occurrence of three specimens in about thirty years. Mr. Travis had at the same time another adult Puffin from March, in Cambridgeshire, which I purchased in the flesh, and this bird had evidently met its death by flying against some obstacle, the contact with which had fractured the skull. A local paper records the fact that two days after the gale "more than twenty sea-birds were picked up on the warrens near Icklingham and Mildenhall, driven in by the terrific storm of Nov. 18th. There were amongst them Guillemots, Razorbills, Puffins and Little Auks. Mr. Howlett, of Newmarket, had no less than thirty brought to him, some of them alive."—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Uncommon Birds in Somersetshire.—About the end of last November one or two uncommon birds were shot near Bridgwater, amongst others a Peregrine Falcon, a Grey Phalarope, and an immature Pomatorhine Skua, *Stercorarius pomatorhinus*. The last named was brought to me, in the flesh, for identification, and, as far as I know, it is the first reported occurrence of this bird in Somerset. On Nov. 3rd a Guillemot was shot in the river close to the town, just opposite a brick-yard, an unusual time of year at which to find this bird here. All these are in the collection of Mr. C. W. H. Tucker.—H. ST. B. GOLDSMITH (King Sq., Bridgwater).

[The Pomatorhine Skua, though not included by the late Mr. Cecil Smith in his 'Birds of Somersetshire,' has been several times met with in this county. See the Rev. M. A. Mathew's 'Revised List of the Birds of Somerset' in Proc. Somerset Archæol. & Nat. Hist. Soc. 1893.—ED.]

Great Grey Shrike in Worcestershire.—On the 28th November last an unusually large specimen of the Grey Shrike, *Lanius excubitor*, was shot at Brandwood End, King's Heath, Worcestershire. It had but one white wing-spot, was delicately vermiculated on the breast, and measured ten inches and three-sixteenths in length. Mr. H. E. Dresser, who examined the bird, said that it was *L. excubitor*, and of the variety known as *L. major*, though not the true *L. major*.—F. COBURN (Holloway Head, Birmingham).

Cuckoo chased by a Rook.—At Midhurst last summer a Rook was seen chasing a Cuckoo, and shortly after a Cuckoo was picked up dead. When skinned and dissected it was found to have died from a clot of blood on the heart, evidently the result of fright and the speed at which it was forced to fly. The bird is now in my collection. Can any one tell me why the Rook should have been antagonistic to the Cuckoo?—J. N. SMITH (30, Shooter's Hill Road, Blackheath).

[The Cuckoo is frequently chased by other birds, apparently mistaken for a hawk, the common enemy to their race.—ED.]

Great Shearwater in Killala Bay, Co. Mayo.—On the 23rd April last, whilst standing on the end of the pier at Enniscrone watching a play of Gulls, I was surprised to see a flock of eleven Shearwaters beating about amidst the crowd of Gulls and Guillemots. Their mode of fishing was very peculiar, and quite different from that of the other birds; for, while in full flight close along the surface of the water, and without the slightest pause, they would suddenly dash into the water with a splash, and disappear beneath the surface for some moments, reappearing again some yards further on. This mode of fishing they continued while beating to and fro over the spot where the fish were, like sporting dogs quartering a field for game. I had a very good though distant view of them through my glass, and from their much larger size than the Manx, and from not displaying the pure black and white plumage of that bird, I have no doubt of their being the Great Shearwater, *Puffinus major*. None of those that I saw were dark enough underneath for the Sooty Shearwater, *P. griseus*. I continued to watch them for an hour, and regretted that, being Sunday, I was unable to obtain a gun and boat and go in pursuit of the flock. I have never before known this species to appear on our coast in April. Is it probable that a few pairs may breed on some remote part of the Irish coast? No doubt there are many islands and island rocks that have never been visited by competent naturalists.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

"Blood-Olph," a name for the Bullfinch.—'The Zoologist' for December contains a review of Prof. Newton's 'Dictionary of Birds,' in which the following passage occurs:—"It is stated that 'Blood-Olph' is a not uncommon name for this bird (the Bullfinch); but we have never met with it, though we have been in almost every county in England." It may be worth pointing out that the name, spelt as "Bloodolf," occurs in a list of local names in use in Norfolk, contributed by the late Mr. J. H. Gurney to 'The Zoologist' for 1878 (p. 288), and in the first volume of the 'Birds of Norfolk' (p. 234), Mr. Stevenson writes:—"The provincial name of 'Blood Olph' is commonly applied to the Bullfinch in Norfolk, in the same way that 'Green Olph' is used to denote the Greenfinch, as before stated." It is hardly necessary to add that the name is derived from the

carmine-red of the breast of the male Bullfinch, and I venture to say that if one of these birds were exhibited in any village school in Norfolk or Suffolk, it would be recognised as a "Blood-Olph." A friend, who has for many years taken much interest in the Suffolk dialect, has appealed in vain in the local press for information as to the origin of the name "Olph." Montagu and St. John, in their respective works on British Birds, give the name "Alp," the latter adding in his index, "Bloodulf, a name for the Bullfinch." It may be of interest to add that in May last I had a nest of the Bullfinch brought me, with three eggs of the Bullfinch and one of the Cuckoo, which I believe to be thoroughly genuine.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Ring Dove pairing with Domestic Pigeon.—During the past summer a Ring Dove, *Columba palumbus*, paired with a House Pigeon at Rusland, and two, if not three, clutches of eggs were laid during the course of the summer in the buildings. Though both the parent birds attended zealously to the task of incubation, I am sorry to say the eggs proved unfertile. The birds were much attached to each other, and the tame bird seemed proud of the alliance. The cushat, a hen bird, was quite tame, and fed fearlessly on the lawn and in the yard.—CHARLES F. ARCHIBALD (Rusland Hall, Ulverston).

[Several cases are on record of the Wood Pigeon breeding in captivity, but instances of its interbreeding or pairing with other species are rare. In 'The Field' of July 22nd, 1876, Mr. Tomalin, of Northampton, reported that a male Stock Dove paired with a hen Wood Pigeon in his aviary, and two eggs were laid, but were unfortunately broken, having been evidently pecked by one of the birds. The late Mr. Robert Gray, of Glasgow, several times succeeded in rearing young Wood Pigeons from eggs placed under a House Pigeon, but in only one instance did he know of a Wood Pigeon breeding in captivity. This was a hen bird which was taken young and restored to liberty when full grown; but instead of flying away she paired with a House Pigeon in a dovecote at Cummock. The pair had eggs three times, but only one young bird was reared. This was larger than the domestic Pigeon, and resembled the female parent in its general markings.—ED.]

Swimming Powers of the Water Ouzel.—The question has often been asked whether the Water Ouzel can swim. I have myself, in the course of an experience of nearly half a century as a fisherman, very often seen this bird dip into shallow water running quickly over gravel, and disappear for a short time. I believe that it can run on the bottom. But on the 19th October last I was fishing for salmon in the River Usk at Llanguttur, Monmouthshire, in a part where the stream was wide, very strong, and certainly five feet deep. I was accompanied by a friend,

Mr. C. W. Walker, of Pontrilas. We saw a Water Ouzel fly into the middle of the stream, settle there, dive more than once, like a Dabchick, and when we got quite near to the place, rise from the water and fly away. There was no question what the bird was. How it accomplished these feats is more than I can say, but that it did so I am a witness.—B. ST. JOHN ATTWOOD MATTHEWS (Pontrilas Court, Hereford).

[We have repeatedly seen the same thing when fishing in Northumberland and in North Wales, and supposed it well known to all observant anglers on streams where the Dipper is common. It has a pretty habit of alighting on the water, or entering it from a stone in mid-stream, and allowing itself to be carried down by the current. You see what appears to be a little ball of white foam approaching you, and when within a few yards it turns out to be the white breast of a Dipper, which suddenly rises and flies away.—ED.]

White Wagtail in Worcestershire.—On the 6th May last I shot a White Wagtail, *Motacilla alba*, at Brandwood End, King's Heath; and on the 13th April another was shot within a few miles of Brandwood End. These are the first I have on record for Worcestershire. I saw another, but did not interfere with it. I watched it almost daily until the end of June.—F. COBURN (Holloway Head, Birmingham).

Nesting of the Sparrowhawk.—Having for some years particularly noted the materials used by this bird in nesting, I have found that three-fourths consisted not only of the usual twigs and sticks, but also of a quantity of small pieces of bark, on which the eggs are laid—not necessarily the bark of the tree in which the nest is built, for, in one case that came under my notice, a Sparrowhawk repaired the old nest of a Carrion Crow that had wintered many a year in the top of a large holly tree, with the bark of both fir and oak for lining. I have found Sparrowhawks not only utilising nests of the Carrion Crow in several instances, but returning to old nests of their own species after a lapse of one or more years, these nests having in the meantime been occupied by Long-eared Owls. In the majority of cases, however, they seem to build entirely fresh nests.—J. S. ELLIOTT (Dixon's Green, Dudley).

Waxwing in Worcestershire.—A portion of the flock of Waxwings, *Ampeelis garrula*, which visited us last winter, made their way to the Lickey Hills, Burnt Green, Worcestershire. A solitary specimen was picked up dead at the foot of Rednall Hill, and brought to me on the 23rd February last. I saw a Waxwing fly from some trees on the banks of the River Mawddach, near Barmouth, North Wales, on the 28th December, 1892.—F. COBURN (7, Holloway Head, Birmingham).

Cats catching Butterflies and Moths.—May I ask if you have known many cases of a cat catching butterflies and eating them? I was staying

in Devonshire last summer at a house where there was a large quantity of over-ripe fruit on the ground. "Red Admirals" were in numbers also, settling on the pears and apples as they lay broken open by their fall, or eaten away by wasps, &c. I repeatedly saw a cat stalk and catch these "Red Admirals" in her paws, play with them like a mouse, and eventually chew them to a shapeless mass. I never saw her miss catching one, and she invariably touched them so lightly that they fluttered about a good bit when she was playing with them.—J. A. BUCKNILL (Hylands, Epsom).

[We do not remember to have seen a cat catch butterflies, for, as a rule, they fly too high; but we have repeatedly seen one catch small moths upon the lawn on a summer evening and devour them with apparent relish. On one occasion we saw this cat with her paw knock down a Long-eared Bat which was skimming low along the ground in pursuit of the same moths.—ED.]

Notes from Epsom.—It may be of interest to record the breeding of the following birds near Epsom, only some sixteen miles from the middle of London:—Green Woodpecker, Grasshopper Warbler, Common Snipe, Bullfinch, Nightjar, and Dabchick. The Lesser Whitethroat has built freely all over the common, and a pied Rook has frequented the fields for some weeks. This bird seems to feed at some distance from and usually at a different time to the others. The Kingfisher has nested both this and last year on the Mole near Cobham, as well as the Mallard; I have seen as many as four of the former together.—J. A. BUCKNILL (Hylands, Epsom).

Leach's Petrel on the Sussex Coast.—You might like to record in 'The Zoologist' that we have received three specimens of Leach's Petrel during the late gales—one picked up at Arundel, another shot at Southwick by Capt. Curtis, and a third caught alive on the beach near the Brighton Aquarium on Dec. 9th, which lived until the following day. They were all extremely thin and light. The two last mentioned were males, the first-named a female. We have also received lately a handsome specimen of the Little Gull, *Larus minutus*, in immature plumage, sent to us for preservation by Capt. Curtis, of Southwick, who shot it there during the gale on Dec. 13th.—PRATT & SONS (11, North Street Quadrant, Brighton).

REPTILES.

An Assembly of Vipers.—On a sunny bank in a wood near here, my gamekeeper came suddenly upon a bunch of full-grown Vipers, all intertwined. Having his gun with him, he fired a charge of shot into their midst, and this had the effect of disabling eight, which were afterwards killed with successive shots, and scattering others, which made their escape. I take it to be a rare occurrence for so many adult Vipers to be found in company.—J. C. MANSER PLEYDELL (Whatcombe, Blandford, Dorset).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 16th, 1893.—Prof. STEWART, President, in the chair.

Messrs. R. Assheton, H. N. Bernard, and W. H. Wilkinson were admitted Fellows.

Mr. J. H. Veitch exhibited a large and interesting collection of economic and other vegetable products of Japan, recently brought by him from that country, and described the various uses to which different kinds of wood, fibre, grass, &c., were applied for domestic purposes, as also the way in which various sea-weeds were collected and prepared for food. As the vegetable product was in every case labelled with the scientific name of the plant from which it was prepared, the series was a most instructive one, and a hearty vote of thanks was accorded to the exhibitor.

Mr. A. G. Renshaw exhibited a remarkably large specimen of the Giant Puffball, *Lycopodium giganteum*, which he had gathered at Catford Bridge, and which was considered to be above the average dimensions.

On behalf of the Rev. Prebendary Gordon, M.A., the Secretary exhibited a plant of *Veronica salicifolia* of New Zealand, found growing in Langland's Bay, Mumbles, Swansea, the seeds perhaps having been introduced in ballast from some homeward-bound ship.

A paper was then read by the Rev. G. Henslow, M.A., "On the Origin of Plant-structures by self-adaptation to the environment, exemplified by desert and xerophilous plants." The purport of this paper was to prove by a direct appeal to facts the probably universal application of Mr. Darwin's assertions, viz. (1) that Natural Selection has no relation whatever to the primary cause of any modification of structure ('Animals and Plants,' &c., vol. ii. p. 272); (2) that modifications of structure are due to the direct action of the environment (*vide* Darwin, Weismann, Spencer, &c.); this always results in "definite variations," by which Mr. Darwin signifies (3) that all, or nearly all, the individuals became modified in the same way ('Origin of Species,' 6th ed. p. 106); and consequently (4) that "a new variety would be produced without the aid of natural selection" ('Animals and Plants,' ii. 271; 'Origin of Species,' pp. 72, 175). Mr. Henslow showed (1) that all the species constituting the peculiar *facies* of a desert flora are the direct result of their climatic conditions; (2) that these peculiarities are in nearly all cases of the utmost benefit to the plants, such as the hardening of the tissues, the reduction of parenchyma, the minute size of the leaves, the dense clothing of hair, a thick cuticle, the presence of wax, storage of water tissues, &c.; but (3) these features are just those which systematists utilise as descriptive characters of varieties and species. Mr. Henslow observed that by Darwin's assuming that "indefinite varia-

tions" which are characteristic of *cultivation* were equally so in *nature*, he reasonably requires natural selection to correspond with artificial selection, but that assumption he believed to be erroneous. For experiments proved that by sowing seeds in a very different medium, *all* the seedlings vary in the same direction, *viz.* that of adaptation to the new environment, verifying Mr. Herbert Spencer's statement that "under new conditions the organism immediately begins to undergo certain changes in structure, fitting it for its new conditions." The conclusion is thus arrived at which is expressed in the title of this paper. The functions of natural selection therefore become limited as follows:—(1) The survival of the constitutionally strongest amongst seedlings. (2) Delimitation of species by the non-reproduction of intermediate forms. (3) The geographical distribution of plants by self-adaptation. An interesting discussion followed in which Prof. Reynolds Green, the Rev. Dr. Klein, Mr. Perry Coste, and others took part.

December 7th.—Prof. STEWART, President, in the chair.

Mr. A. Trevor Battye was admitted a Fellow of the Society, and the following were elected:—Messrs. J. H. Cooke, H. Cummins, R. E. Leach, C. Sharp, A. Smith, F. C. Smith, A. H. Teague, and H. L. Thompson.

Mr. C. T. Druery exhibited and made remarks upon a new example of apospory in *Scolopendrium vulgare*, and Prof. Bower brought forward a similar case in *Trichomanes Kaulfussii*.

Mr. George Brebner exhibited some new and rare British Algæ, including *Haplospora globosa*, *Tilopteris mertensii*, *Ectocarpus tomentosoides*, and *Polysiphonia spinulosa* v. *major*.

Mr. F. Enoch, with the aid of the oxyhydrogen lantern, exhibited the various stages of development of the black-currant mite, *Phytopus ribis*, and gave an interesting account of its life-history.

Mr. Thomas Christy exhibited a gigantic reed from the Zambesi, with drawings of sections. It appeared to be allied to *Sansevieria cylindrica*, but differed conspicuously in the greater size of the leaves, which measured nine feet in length, instead of from eighteen inches to three feet. The remarkably tough and strong fibre which it produces is considered to be of great commercial value, being equal to the best *Sansevieria* hemp.

Mr. W. F. Kirby read a paper on the Dragonflies of Ceylon, with descriptions of some new species. The paper was based chiefly upon a collection made by Cel. Yerbury, which he had presented to the British Museum. Seventy-five species were enumerated, of which fifty-five had been collected by Col. Yerbury. Another collection, made in Ceylon by Mr. E. Green, had been dealt with in a previous paper (Proc. Zool. Soc. 1891, pp. 203—206).

On behalf of Signor Martelli, the Secretary read a paper "On the cause of the fall of the corolla in *Verbascum*," which gave rise to an interesting discussion.

ZOOLOGICAL SOCIETY OF LONDON.

November 21st, 1893.—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of October, 1893, and called special attention to an example of the Goliath Beetle, *Goliathus druryi*, the largest of known Coleoptera, obtained near Accra, and presented October 5th by Mr. F. W. Marshal; and to an adult female and a young of the Manatee, *Manatus americanus*, captured in Manatee Bay, Jamaica, and most kindly sent home for the Society's Collection by Sir Henry A. Blake, K.C.M.G. Unfortunately the Manatees had reached the Gardens in a very exhausted condition, and died soon after their arrival.

The Secretary read an extract from a letter addressed to him by Mr. J. S. Mackay, of the Kangra District, Punjaub, relating to a young Snow-Leopard which he had in captivity, and exhibited some photographs of this animal.

Mr. Sclater exhibited and made remarks on a mounted specimen of an African Monkey, *Cercopithecus albogularis*, belonging to the Leyden Museum.

Mr. W. B. Tegetmeier exhibited and made remarks on two hybrid Pheasants, believed to be crosses between the Common Pheasant and the Gold and Silver Pheasants.

A communication was read from Messrs. G. W. and E. C. Peckham, on the Spiders of the family *Attidæ* of the Island of St. Vincent, based on specimens collected in that island by the agency of the joint Committee of the Royal Society and the British Association for the exploration of the Lesser Antilles. The series had been collected by Mr. Herbert H. Smith and Mrs. Smith, who had been specially sent to the island as skilled collectors by Mr. F. D. Godman.

A communication was read from Mr. P. R. Uhler, containing a list of the Hemiptera-Heteroptera collected in the Island of St. Vincent by Mr. and Mrs. Herbert H. Smith, with descriptions of new genera and species.

Dr. G. Lindsay Johnson made some observations on the refraction and vision of the eye of the Common Seal, *Phoca vitulina*.

Mr. Sclater read a paper on some specimens of mammals from Lake Mweru, British Central Africa, transmitted by Vice-Consul Alfred Sharpe, through Mr. H. H. Johnston. The specimens were referred to seventeen species, amongst which was a new Monkey of the genus *Cercopithecus*, proposed to be called *C. opisthostictus*, and a new Antelope allied to the Waterbuck, which was named *Cobus crawshayi*, after Mr. R. Crawshay, who had first discovered the species.

December 5th.—W. T. BLANFORD, F.R.S., F.Z.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of November, 1893. Among these special attention was called to a Cunning Bassaris, *Bassaris astuta*, obtained by purchase; to two Jerboas presented by Capt. R. A. Ogilby; and to a fine adult female of the Caucasian Wild Goat, *Capra caucasica*, presented by Mr. H. P. Deasy.

Prof. G. B. Howes exhibited and made remarks on some specimens of abnormal Marsipobranch Fishes. These were two heads of the Lamprey with the first pair of gills only imperfectly developed, and a Hag, *Myxine glutinosa*, with a supernumerary gill on one side.

Mr. F. E. Beddard gave an account of the general geographical distribution of Earthworms, as treated of in a work on the subject which he had in preparation. Mr. Beddard recognized 69 genera of this order, divided into six families; and after some preliminary remarks on the artificial introduction of Earthworms into districts colonized from Europe, called attention to a series of tables in which the genera found in the six generally recognized regions of the earth's surface were shown. In addition to these six regions Mr. Beddard was disposed to recognize, in the case of Earthworms, the existence of an Antarctic Region, to embrace New Zealand and most of the Antarctic Islands.

A communication was read from Mr. C. J. Gahan, containing an account of a collection of Coleoptera sent by Mr. H. H. Johnston, from British Central Africa. Amongst these were examples of eight species new to science.

A communication was read from Capt. F. W. Hutton, containing a report on a collection of Petrels from the Kermadec Islands. Amongst these was an example of a new species proposed to be called *Æstrelata leucophrys*.

Mr. G. A. Boulenger gave an account of *Vipera renardi*, a newly-recognized European Viper from Southern Russia and Turkestan.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 6th, 1893.—HENRY JOHN ELWES, Esq., F.L.S., President, in the chair.

Mr. W. F. Kirby exhibited, for Dr. Livett, a series of specimens of a moth taken at Wells, which Dr. Livett considered to be varieties of *Dasy-campa rubiginea*, but which many entomologists present thought were varieties of *Cerastis vaccinii*. Mr. Kirby added that specimens similar in appearance to those exhibited had been taken rather freely during the past

autumn in Berkshire, and it was suggested that they might be hybrids between *D. rubiginea* and *C. vaccinii*.

Mr. Lovell Keays exhibited a series of *Lycæna alexis*, with confluent spots on the under sides of the front wings. He drew attention to the fact that the insects were all taken within a short radius, and probably were in the ratio of about one in forty with reference to the ordinary forms. All the examples, with one exception, were females.

Mr. C. O. Waterhouse exhibited the type-specimen of *Coptomia opalina* of Gory, from the Hope Collection at Oxford, and pointed out that it was quite distinct from *C. mutabilis*, W. The distinct punctuation of the whole insect, and the striolate pygidium in *C. opalina*, were sufficient to distinguish it at once. Mr. Waterhouse called attention to this, as some French entomologists maintain that these insects are the same species. He also called attention to *Silpha atomaria*, of Linnæus (Syst. Nat., ed. xii., i., p. 574), a Swedish species which appeared to have escaped notice, and was not included in any catalogue. The type is still extant in the Linnean cabinet, and Mr. Waterhouse said he was of opinion that it is *Olibrus geminus* of our collections, but he had not had an opportunity of making a critical examination. He also exhibited male and female specimens of a *Helopeltis* (the Tea-Bug), which he considered a distinct species, and stated that it had occurred only in Assam.

Mr. M. Jacoby exhibited certain species and varieties of the genus *Ceroglossus* from Chili, and Dr. D. Sharp, Mr. J. J. Walker, and Mr. Champion made remarks on their geographical distribution.

Prof. Scudder exhibited the type-specimen of a fossil butterfly—*Prodryas persephone*—found in beds of Tertiary Age (Oligocene) at Florissant, Colorado. He said the species belonged to the *Nymphalidæ*, and the specimen was remarkable as being in more perfect condition than any fossil butterfly from the European Tertiaries. He also stated that he had found a bed near the White River on the borders of Utah, in which insects were even more abundant than in the Florissant beds.

Mr. Goss exhibited hibernating larvæ of *Spilothyrus alcea*, which had been sent to him by Mr. F. Bromilow from St. Maurice, Nice.

Mr. W. F. H. Blandford read a paper entitled "The Rhynchophorous Coleoptera of Japan. Part III. Scolytidæ."

Mr. G. T. Bethune-Baker read a paper entitled "Notes on some Lepidoptera received from the neighbourhood of Alexandria," and exhibited the specimens.

Mr. C. O. Waterhouse read "Further Observations on the Tea-Bug (*Helopeltis*) of India"; and Dr. F. A. Dixey communicated a paper "On the Phylogeny of the *Pierinæ*, as illustrated by their wing-markings and Geographical Distribution."—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

NOTICES OF NEW BOOKS.

Horns and Hoofs; or, Chapters on Hoofed Animals. By R. LYDEKKER. 8vo, pp. i-vii, 1-400, with 82 illustrations. London: Horace Cox. 1893.

THIS volume consists mainly of a reprint of articles contributed to the natural-history columns of 'The Field' during the last two or three years, with one or two from other journals; but the author informs us in his Preface that, since their original appearance, several of the chapters have been more or less recast, in order to bring them up to the present state of zoological knowledge, while they have been embellished by the addition of a number of new illustrations. All the animals dealt with in the work come under the designation of Big-game, but include only certain groups of the order *Ungulata*. The reason of this limitation we are unable to understand, nor is any explanation given in the Preface for the omission of such highly important species as the Wapiti, Black-tailed, Virginian, and Mule Deer, Pronghorn Antelope, and Rocky Mountain Goat. The American Moose is very cursorily referred to (pp. 321-322) under the head of Elk in the chapter on Asiatic Deer, and the account given of the Big-horn, *Ovis canadensis*, is wholly inadequate, notwithstanding the two good illustrations of the head and skull of the Kamschatkan race, *Ovis nivicola*, reproduced from Guillemard's 'Cruise of the Marchesa.' This omission of the North American *Ungulata*, above mentioned, is a serious defect in a book which, from its title, would naturally be supposed to be thoroughly comprehensive.

Even in the case of the American Bison, to which some six or seven pages are devoted, we find little more than quotation from Mr. Hornaday's recent book on this animal (Washington, 1889), while the much more important monograph by Mr. J. J. Allen on 'American Bisons, living and extinct' (published with twelve plates and a map in the 'Memoirs of the Museum of Comparative Zoology at Harvard College') is not even so much as mentioned.

Leaving the North American species, then, out of consideration, the groups dealt with are Wild Oxen, Wild Sheep, Wild Goats, the Antelopes of Asia, African Antelopes, the Deer

of Asia, the Deer of South America, Wild Pigs, and Rhinoceroses, ancient and modern. None of these chapters are exhaustive, and some of them are even meagre in their details. Perhaps the best of them is that on African Antelopes, and this is fairly well illustrated.



FIG. 1.—HEAD OF SABLE ANTELOPE, *Hippotragus niger*.

We give here, by permission of the publisher, two of the heads figured, namely (Fig. 1), head of the Sable Antelope, *Hippotragus niger*, and (Fig. 2), head of the Waterbuck, *Cobus ellipsiprymnus*.

The great variation in the shape and curvature of the horns in the African Antelopes is very remarkable, and has led to considerable difficulty in the way of systematic classification. As a rule, they are more or less lyrate in shape, with a sub-circular cross-section, and an upward direction. They may,

however, be almost straight, as in the Gemsbok (*Oryx*); curved backwards and marked by bold rings as in the Sable Antelope



FIG. 2.—HEAD OF WATER-BUCK, *Cobus ellipsiprymnus*.

(*Hippotragus*); ridged and spirally twisted, either on its own axis, as in the Eland (*Oreas*), or in a corkscrew shape, as in the Kudu (*Strepsiceros*), or sharply bent down and then upturned, as in the Gnu (*Conochetes*). In the Hartebeests (*Bubalis*), we have a different form again. In this genus the horns are characterised by a remarkable divergence at the base, so much so that in one

species (Cooke's Hartebeest) they form a right angle with the middle line of the face. In no case, however, do the horns assume the characteristic form and curvature of the true goats, or sheep.

As to what constitutes the difference between Wild Sheep (clothed as they are with *hair* instead of *wool*), Mr. Lydekker remarks:—

“All species of Sheep have glands in both hind and fore feet, whereas in the Goats these glands, if present at all, occur only in the fore feet. In the Oxen they are invariably absent. The absence of a true beard on the chin,* and also of a strongly marked odour in the males of sheep, are important points of distinction from the goats. In the more typical species of sheep, the horns are triangular, and marked by parallel transverse wrinkles, extending completely round them, their first curve being directed downwards and forwards, and the second curve turned outwards; while their colour is either light brown or greenish [*quære*, greyish] brown. Certain species of sheep, however, such as the Bharal of Thibet (*Ovis nahura*) [with smaller, smoother, and more spreading horns], present so marked an approximation to the goats in the structure of their horns as well as in some other features, that it is extremely difficult, if not impossible, to draw up a concise definition between the two groups so far as these points are concerned.

“So closely related, indeed, are the sheep to the goats, that Dr. A. R. Wallace, in his well-known ‘Geographical Distribution of Animals,’ has proposed to include the whole of them in a single genus—the genus *Capra* of Linnæus. This view, however, has not commended itself to the majority of zoologists, who class all the sheep in the genus *Ovis*. In this respect, therefore, zoologists and sportsmen are for once in accord, and although, as already mentioned, some of the more aberrant species of sheep approximate to the goats in several respects, yet neither zoologists nor sportsmen find any practical difficulty in deciding to which group any species brought for the first time under their notice should be referred.”

The chapter on Asiatic Deer is an interesting one, dealing as it does with a large number of species; but it is disappointing in the brevity with which each species is treated. If economy of space were an object, it would have been useful to have referred the reader to other works in which some account of the haunts and habits of these animals are given from personal observation. For example, under the head of *Cervus maral*, Mr. Lydekker might have quoted or referred to the interesting account of this

* In *Ovis cycloceros*, however, of Northern India, we have an intermediate form with a beard on the throat.—ED.

fine deer given by Col. Gordon in his 'Roof of the World,' as he quaintly termed his volume of travels in Turkestan.

By the way, the Gazelle of Turkestan (or, as the people there call it, *Djeran*), of which Col. Gordon shot a fine example at Togha Sulvok, between forty and fifty miles from Maralbashi (the Stag's haunt), is not noticed by Mr. Lydekker. It is described (*op. cit.* p. 71) as "measuring $27\frac{1}{2}$ inches at the shoulder, and resembling the Indian Gazelle [which stands 26 in. only at the shoulder], except that the horns are larger, and curve outwards, the tips being turned sharply inwards towards one another, making a very handsome head." We presume this must be the Persian Gazelle, *Gazella subgutturosa*, which, according to Mr. Blanford ('Mammalia of British India,' p. 528), is found not only throughout the highlands of Persia, but over a considerable area in Central Asia, extending through Eastern Turkestan to the Gobi desert. It has been well described and figured by Mr. Blanford in his account of the Mammals of the Yarkand Expedition.

But, to return to Mr. Lydekker. His book, as it seems to us, is a disappointing one. A fine theme is inadequately treated. There are gaps remaining to be filled, and many references to be supplied, before it can take rank as a satisfactory handbook on the subject of which it treats. No doubt, as a popular exposition of the great groups of Ungulates, with brief notices of the species, and figures of the heads of many of them, it will serve a useful purpose; but it is not worthy of the author's reputation. Let us hope that in a future edition the defects will be remedied, including the substitution of "capitals" for "lower-case" initials to the English specific names, which are very irritating to a busy reader.

Travel and Adventure in South-east Africa: being the narrative of the last eleven years spent by the Author on the Zambesi and its tributaries; with an account of the colonization of Mashunaland, and the progress of the gold industry in that country. By F. C. SELOUS. 8vo, pp. i—xv, 1—503. With 24 full-page illustrations, and numerous text-cuts. London: Rowland Ward & Co. 1893.

ELEVEN years ago we had the pleasure of reviewing (*Zool.* 1882, p. 78) the first work published by Mr. Selous, namely, his

'Hunter's Wanderings in Africa,' which was a narrative of nine years spent amongst the game of the far interior of South Africa. In the opinion of naturalists, explorers, and sportsmen, it was the best modern book of its kind, and the praise which we then bestowed upon it was speedily justified by the book going out of print, and a second edition being called for. In the long interval which has elapsed Mr. Selous has been again "wandering" in his happy hunting grounds, and the volume now before us contains the narrative of his further adventures during his eleven years of absence.

It is indeed a stirring narrative, and one calculated to excite the admiration and envy of sportsmen and naturalists. We place the sportsman first on this occasion, because it is as a hunter of "big-game" that Mr. Selous conspicuously excels. Few have had longer experience or better opportunities for observing the wild animals of South Africa in their natural haunts, and none, we should imagine, have been more successful in chasing and slaying them.

As a mere record of sport his book is instructive, setting clearly before the reader the qualifications necessary to constitute a hunter. One of the first essentials is a knowledge of the country, and this is only to be gained by experience such as Mr. Selous has acquired in years of travel. Then an insight into native character is important to enable one to set a proper value on replies given to questions, and to escape attempted imposition. A knowledge of "tracking" is almost indispensable, not only for the purpose of following hunted game, but to enable one to find one's way back to camp after a long and perhaps intricate chase in a new and difficult country. This may often be rendered unnecessary by the services of native hunters, to whom one may turn for assistance; but it is as well not to rely too much upon attendants, in case of accident, or separation from the party, when one's own safety may depend upon a little self-reliance, and the exercise of independent judgment. Resolution and nerve, it goes without saying, are all-important in such undertakings, as well as fertility of resource and promptness of action in an emergency. Expertness in the saddle and with the rifle are qualifications without which but little success can be hoped for or expected, and some knowledge of the habits of the animals hunted is almost a *sine qua non*, although this may be acquired

by experience and by the teachings of others. Lastly, if the object of the sportsman be to secure trophies of the chase for transport to England, it is evident that he should know how to take off a skin and preserve it.

These are some of the qualities which go to make a mighty hunter (such as the author of this book evidently is), and which are admirably brought out in his narrative. It does not always do, however, to be too self-reliant; one should draw the line between courage and foolhardiness, as witness the adventure with lions described on pages 144-145.

Two small objects were seen out in the open plain the best part of a mile off, looking like two ant-heaps. They proved to be lions' heads, and this was what happened:—

“The animals got up, and were walking slowly over the open plain, one behind the other. I saw at once that they were lions from the length of their bodies, and the way they held their heads below the line of their backs. I could see, too, that they were males, from the thick humpy look of their necks caused by the mane. Oh, for a rifle and ten cartridges, and then, as I was very well mounted, I should in all probability have added two more lion-skins to my collection. Thinking that, as I could not shoot them, I would like to have a look at them, I mounted my good horse, Bob, and galloped towards them. They continued to walk slowly along, until I was within 400 yards of them, when, after first turning to look at me, they went off at a heavy canter, but soon commenced to trot, and when I was about 200 yards from them stopped, and facing round stood side by side with their heads held low and their mouths slightly open, and all the time twitching their tails and growling savagely. I continued to ride straight towards them, thinking they would give way and run again; but when within about 100 yards, as they still stood defiant, and one of them, a very fine dark-skinned animal with a handsome mane, seemed particularly furious, I slightly turned my horse's head so as to pass them at a distance of sixty or seventy yards. Whilst executing this movement, the dark-maned lion came slowly towards me for a few steps, and then, bounding forward and growling loudly, charged out at his best speed. As I had to half turn my horse and get him into his stride, the lion got within some ten yards or so of his tail before he was going at his best pace, and stuck close to him for some distance. How far he chased me I am afraid to say, but a very considerable distance, and certainly twice as far as I have ever been pursued by any other of his kind. When at last he pulled up, he trotted slowly back to his comrade, and they both lay down on the bare open ground, with their massive paws outstretched, their heads held high, and their mouths half open, with their tongues lolling out, for it was a very hot day.”

After this observation on the attitudes of lions, the following criticism upon the positions of Sir Edwin Landseer's bronze lions in Trafalgar Square is worth quoting, as coming from one well qualified to judge:—

“They lay almost exactly in the position of Landseer's lions in Trafalgar Square, and it is quite a mistake to say that that great artist has made an error in representing lions lying with the fore paws straight out like a dog. When on the alert a lion always lies like this, and only bends his paws inwards, like a cat, when resting thoroughly at his ease.”—(P. 147).

On page 32 we have given a figure of the head of the Sable Antelope. The way in which this animal is able to defend itself with its horns, in spite of their backward curvature, is thus graphically described by Mr. Selous:—

“The foremost dogs soon caught sight of the Sable Antelope, which, badly wounded by Van Rooyen's bullet, was making off slowly towards the stream which ran down the centre of the open ground. We ran as hard as we could to call the pack off, and despatch the beast before any of our valuable dogs were killed; for we knew from experience what havoc a wounded Sable Antelope can make amongst a pack with its long and curved horns. Just as we were nearing the water, two of my own dogs came howling up the bank, both badly wounded, and the loud barking of the rest of the pack, coupled with the defiant snorts of the Antelope which proceeded from the bed of the stream, let us know that the brave beast was still making a gallant fight, and doing his utmost to sell his life dearly. A moment later we despatched him with two bullets through the head and neck, and not a moment too soon. Four of our best dogs lay dead around their quarry; four more were badly wounded, one of which subsequently died. My old bitch ‘Ruby’ had one more very narrow escape. She had been struck right through the throat by the sharp horns of the Antelope, though fortunately it had only pierced through between the skin and the windpipe.

“I have mentioned this instance of the able manner in which a Sable Antelope can use its horns when beset by dogs, to show that these animals are often very savage when wounded, and I would caution young sportsmen against approaching either a sable or a roan antelope, a gemsbuck, or a wildebeest, when any of these animals are standing at bay.” — (Pp. 191–192).

Apropos of Ostriches:—Many persons suppose, and indeed it has been stated on high authority, that the process of incubation is carried on by the male bird only. This is a mistake, as we

have elsewhere had occasion to point out*; and the observations of Mr. Selous, which follow, confirm the view we have expressed:—

“At mid-day on the 16th July I found myself on the edge of the broken country in which the Mazoe takes its rise. * * * * * It was getting late in the afternoon, when I suddenly descried a black speck, which looked like an Ostrich, far away in the distance. Pulling in my horse, I looked intently at it. As I did so, it suddenly disappeared. I felt sure that it had lain down in the grass, and knew that if it really had been an Ostrich, it was very probable that it had a nest there, for it was the breeding season for these birds. I accordingly rode steadily in the direction where whatever it was I had seen had disappeared, and at length began to think I had overridden it, when up jumped a hen Ostrich from a little patch of long grass, about eighty yards in front of me, and ran away slowly with outstretched drooping wings and lowered neck. I might have had a splendid shot at her, *but from the way she ran I knew she had got off her nest*, and so did not fire, as I felt sure that if I now went the right way to work, I should in all probability be able to secure the cock bird. Riding up to the patch of grass from which the hen bird had risen I saw she had a nest there containing thirteen eggs.”—(P. 82.)

Further on he makes the state of the case clearer:—

“Between Inyati and the Umniati river we did not find very much game. * * * Just after crossing the river Vungo, Jameson and I, having taken a ride round, *came upon a hen Ostrich on her nest*. We went up to the nest, which was just a large shallow hole scratched in the sandy soil, and found that it contained twelve eggs. Thinking that either the cock or the hen would put in an appearance just at sunset, *which is the time these birds relieve one another whilst incubating*, we cleared out a little space in the centre of a small thick bush, about thirty yards from the nest, in which my friend took up his position. * * * * * He shot the hen bird as she was returning to the nest just at sunset. She was in very good plumage, and worth about £10, the feathers of a fine cock being worth about £25 at that time. The next day we sent some Kafirs back for the eggs, of which we afterwards made some very good omelettes and pancakes.”—(P. 463).

Amongst other stirring incidents related in this book is a curious case of cattle struck by lightning, which is thus described:—

“In December, 1882, I was travelling south from the Matabili country, and was in charge of about a hundred head of cattle belonging to

* See ‘Nature,’ March 22nd, 1883.

Mr. Fairbairn, a well-known trader. I was just inspanning the waggons one afternoon amongst the hills skirting the Inkvesi river, when a heavy storm of rain came on, accompanied by much thunder and lightning. The boys herding Mr. Fairbairn's cattle now drove them up alongside of the waggons, and they stood thickly clustered together amongst the trees. Suddenly from where I stood in front of my waggon, I saw some splinters of wood fly from a tree near me—about sixty yards off—whilst all the cattle standing beneath it fell to the ground. On going up to see what had happened, I found thirteen fine oxen lying dead. Most of them must have had their heads down feeding, and had been struck dead so instantaneously, and fallen so suddenly, that their necks and heads were bent in, under their bodies. I could not get a Kafir to come near the dead animals, and they seemed quite frightened at what had occurred. I turned all the carcasses over, but could find no mark of any kind upon them.”—(P. 447).

With this extract we must close the volume, although we had marked several other passages for quotation. To the general reader, probably, the most interesting portion of the book will be that which relates to the occupation of Mashunaland, and the guidance of an expedition by Mr. Selous to a spot on the Makabise river, about ten miles S.E. of Mount Hampden, where, on Sept. 11th, 1889, the British flag was hoisted, and the country taken possession of in the name of the Queen; and here the town of Salisbury was soon after laid out.

But we must not be led into a discussion of politics, which would carry us entirely out of our province. We must be content to refer the reader to Mr. Selous's vindication of the justice of the occupation of Mashunaland (in spite of the indignant protests of Portuguese statesmen), as explained by him in a letter to 'The Times,' which is here reprinted (pp. 313-325).

We note that the spelling of native names adopted by the author is that recommended by the Royal Geographical Society, and Mr. Selous has been fortunate in getting his MS. revised by so good an authority as Mr. John Coles, the Map Curator of that Society. The publishers, Messrs. Rowland Ward & Co., seem to have spared no expense in the production of this book, which has been beautifully printed by Clark, of Edinburgh, and is well illustrated by such good artists as Messrs. Wolf, Whympier, Lodge, and others. A map at the end shows the routes traversed by the author during the past eleven years, and, with the aid of the text, furnishes a valuable contribution to geographical science.

THE ZOOLOGIST

No. 206.—February, 1894.

THE OTTER, *LUTRA VULGARIS*.

BY THE EDITOR.

(Continued from Zool. 1894, p. 10).

It must not be supposed that the Common Otter, as has been asserted, is found only in fresh water. Carew, in his 'Survey of Cornwall' (1602), was quite right when he wrote:—

"The Otters, though one in kind, have yet two severall places of haunt; some keepe the cliffes, and there breede, and feede on sea-fish; others live in the fresh ryvers, and trade not so farre downe, who being less stored with provision, make bold now and then to visite the land, and to breake their fast upon the goodman's lambs,* or the good wives pultrie" (fol. 22 verso).

Topsell was in error when giving an account of the Otter, in his 'Historie of four-footed Beasts' (1607), he wrote that "the Beaver goeth both to the salt waters and to the fresh, but the Otter never to the salt," for the exact converse of this is the case.

The late Jonathan Couch, of Polperro, was able to confirm Carew's view of the Otter's haunts in Cornwall, and observed that it will go out fishing a mile from the shore in summer and during fine weather. In his 'Cornish Fauna,' commenced in 1838 (of which a second edition appeared in 1878), he remarked:—

"By far the greatest portion of these creatures in Cornwall derive their food from the sea, where they may be seen diving for fish even where the

* We have never known an instance in which a lamb was proved to have been killed by an Otter, and suspect that in any such reported case a Fox must have been to blame. That the Otter will take ducks and other fowl we have already shown.

waves are very tempestuous. Several instances are known of their being drowned in crab-pots, into which they had entered in search of prey, and had not afterwards been able to find the opening."

Upon this it may be remarked that either the crab-pots in Cornwall are much larger than we have observed them to be on the coast of Sussex, or the Otters captured in them must have been small ones.

We have a note of one that was caught from a yacht lying 230 yards from the shore, and others have been captured in fishermen's nets still further out at sea.*

Donovan once found a very young Otter alive and uninjured on a sandy shore of the Bristol Channel, and finding it so far removed from its natural haunts, supposed it had been dropped there by a Kite or other bird of prey. That was in the days when Kites were far more common in the West of England than they are at the present time.

The Otter is well known to frequent many parts of the coast in Scotland, on which account at one time it was supposed that there were two species, one inhabiting fresh and the other salt water. Sir Robert Sibbald, for instance, in his 'History of Fife and Kinross' (1710), noted that "the sea-otter which differeth from the land-otter, for it is bigger and the pile of its furre is rougher," frequented the Firths of Forth and Tay.

In Ireland, says Thompson:—

"Sea caves and holes among the rocks are resorted to by the Otter, along the northern coast, where there is no river in the neighbourhood; and some of my southern correspondents have made the same observation in reference to their districts. A gentleman residing in an inland situation considers that the species is there on the increase, in consequence of the measures now adopted to preserve the fish in rivers, and also owing to the withdrawal of rewards for Otters' heads."†

In Bell's 'British Quadrupeds' (2nd ed. pp. 178-179), some prominence is given to the opinion of the late Mr. Ogilby, who considered the Irish Otter to be a distinct species from that of England. But this opinion was expressed a long while ago (Proc. Zool. Soc. 1834, p. 111), was founded on very insufficient reasons, and, as admitted by Bell (p. 179), before Mr. Ogilby had had an

* 'The Field,' 1884, p. 560; 1886, p. 331.

† 'Natural History of Ireland,' vol. iv. p. 6.

opportunity of comparing it minutely with the Common Otter, or of examining its osteology. Under these circumstances, it is not surprising that he subsequently changed his views on the subject.*

For choice, the Otter prefers a river which contains deep pools alternating with shallows, and sandy or pebbly spits which form convenient landing places; while the hollow banks with overhanging roots of trees afford secure places of retreat in time of need. In some such hollow, under a bank, often extending in for a considerable distance, the Otter has his "holt," from which it is extremely difficult to dislodge him without the aid of terriers. In parts of the country where the river, though holding fish, offers no good abiding place, he will take up his quarters in some brake, or bed of fern or gorse, in which he will lie concealed during the day, travelling to and from the river at night, and at early dawn. Indeed we have known several cases of Otters being disturbed by a shooting party in a game-covert far away from any water.

In the Norfolk Broads, where Otters are not uncommon, and where they find plenty of good food in the shape of pike and eels, which abound there, they are obliged, from the nature of their surroundings and the general absence of banks, boulders, and overhanging hollow trees, to "lay up" in a very different fashion.†

Here their retreat by day is in the midst of some great reed-bed, where they construct a nest, almost as a Coot does, with broken reeds trodden and flattened down, paved with smaller pieces which are bitten off, and lined with the softer and drier panicles.

These curious "nests," which are peculiar to the district referred to, and are discovered by the reed-cutters, have been well described by Mr. Southwell, who, as a naturalist resident in

* See Thompson's Nat. Hist. Ireland, vol. iv. p. 6.

† We learn from a note on "Otter Hunting in Norfolk and Suffolk," contributed by Mr. M. Knight to the 'Eastern Counties Collectanea,' that in the 16th century the river Yare so abounded with Otters, that in 1557, in some regulations made by the Norwich Assembly for the freshwater fishermen between the tower at Conisford and Hardley Cross, it was provided that "every man shall be bound to keep a dog to hunt the Otter, and to make a general hunt twice or thrice in the year or more, at time or times convenient upon pain to forfeit ten shillings."

Norfolk, has had excellent opportunities for becoming acquainted with the Otter in that county.* That they are not merely nesting-places used by the Otter in the day time, is proved by their being lined with the flowering heads of the reeds, and also by the fact that quite young Otters have been found in them. Mr. Southwell (*l. c.*) mentions one found in a reed-bed near Dilham, from which four young were taken, and carried home alive; another at Hoveton Broad, from which a young one was retrieved by a dog; and a third at Barton Broad, from which the keeper took three young ones. The Ranworth keepers, he says, speak of the "Otter's nest" as "a heap of rough stuff collected together in a reed-bed."

These facts furnish a curious illustration of the marvellous way in which animals will adapt themselves to new or altered conditions of life. In less-known exotic forms such a divergence of habit might be taken to indicate a difference in species, and we have no doubt that this has frequently happened in countries vastly larger than our own, where examples of the same species have been described as distinct for no other reason, apparently, than that they have been found living a considerable distance apart under different conditions of life.

But those who have seen our Otter amidst the beautiful woods and rocks of a Devonshire river, or in a salt-water loch on the west coast, or in the dreary, treeless waste of reeds and water in a Norfolk broad, know full well that he is the same wary, watchful animal, ever on the alert, always distrustful of man, displaying wonderful adaptation of structure to habits, and extraordinary resource in self-preservation.

We hear too much of the destruction of Otters. "Capture of a large Otter" is the heading of a paragraph which appears constantly in the columns of country newspapers; and *cui bono*? Do we hear or read of any corresponding increase of fish? Not at all. If Otters were as destructive to fish as some people would have us believe, their unlimited numbers before the invention of shot-guns or steel-traps ought to have resulted in the destruction of all the fish in our rivers. But all reflective persons know that nothing of the sort has happened. The enormous rate of increase in fish, as compared with the rate of

* Trans. Norfolk & Norwich Nat. Soc. 1872-73,

increase in their natural enemies, will always result in there being enough and to spare for man and otter—aye, for kingfisher and heron, too. It is only when man, with his characteristic greed, steps in with his illegal netting, and, in season and out of season, takes fish wholesale, and prevents the salmon from ascending the rivers to the spawning-beds where they may deposit their ova and so reproduce their kind, that real mischief is done to our fisheries. *Homo sapiens*, not *Lutra vulgaris*, is the real culprit.

No one, we feel sure, who has enjoyed the pleasure of watching unobserved by him the actions of an Otter, in his natural haunts, will grudge him the toll he takes of our coarse fish, or the occasional salmon or grilse of which he deprives the angler.

We know of no writer who has more accurately or felicitously described the habits of the Otter from personal observation than the author of 'Lays of the Deer Forest,' a work replete with beautiful descriptions of Highland scenery and the wild creatures which were observed, and legitimately and scientifically hunted, by two accomplished sportsmen and naturalists.* Here is an extract:—

"One morning, having been out in the forest all night to wait for Roe in the two twilights, I came down to cross at the pool. There was a broken and dangerous ford at its throat, passable only when the water was low. I observed the track of Otters across the little sandy bank, which swelled out on the east side of the ford, and that they were going up the stream and none descending.

"In ascending a river, if the bank will admit, the Otter invariably leaves the water at the rapids, and takes the shore to the next pool; so that if there is an Otter on the stream, his up-track is sure to be found at those places. In returning, however, he will often float down the rapids with the current. The prints which I found in the sand had been made during the night. There was a *chance* that the Otters had not returned, and I climbed into an oak over the pool to see what might come down. Enveloped in the screen of leaves which the brightness of the surrounding sun made more obscure within, I had a view of the rapid above, and into the pool beyond.

"I had sat in the oak for about half an hour, with my eyes fixed on the stream and my back against the elastic branch by which I was supported,

* 'Lays of the Deer Forest; with Sketches of olden and modern Deer-hunting, traits of Natural History in the Forest, traditions of the Clans, and Miscellaneous Notes.' By John Sobieski and Charles Edward Stuart. Two vols. 8vo. Blackwood & Sons. 1848.

and rocked into a sort of dreamy repose, when I was roused by a flash in the upper pool, a ripple on its surface, and then a running swirl, and something that leaped, and plunged, and disappeared. * * * * Presently I saw two dark objects bobbing like ducks down the rapid between the two pools, but immediately as they came near distinguished the round, staring, goggle-eyed heads of two Otters, floating one after the other, their legs spread out like Flying Squirrels, and steering with their tails, the tips of which showed above the water like the rudder of an *Elbe scuite*. Down they came as flat as floating skins upon the water, but their round, short heads and black eyes constantly in motion, examining with eager vigilance every neuk and rock which they passed. I looked down into the pool below me—it was clear as amber—and behind a large boulder of granite in about eight feet of water I saw three salmon—a large one lying just at the back of the stone and two smaller holding against the stream in the same line. They were sluggish and sleepy in the sunshine, without any motion except the gentle sculling of their tails.

“The Otters were steering down the pool, bobbing and flirting the water with their snouts, and now and then ducking their heads till they came over the stone. In an instant, like a flash of light, the fish were gone, and where the Otters had just floated there was nothing but two undulating rings upon the glossy surface. In the next instant there was a rush and swirl in the deep, under the rock on the west side, and a long shooting line going down to the rapid, like the ridge which appears above the back fin of a fish in motion. Near the tail of the pool there was another rush and turn, and two long lines of bubbles showed that the Otters were returning. Immediately afterwards the large salmon came out of the water with a spring of more than two yards, and just as he returned, the Otter struck him behind the gills and they disappeared together, leaving a star of bright scales upon the surface. * * * * The skill with which they pursued their game was like that of well-trained greyhounds in a course. Whenever they came to the throat of the pool they pressed the fish hard to make him double into the clear water, and one was always vigilant to make him rise or turn, the increased effort of which exhausted his strength. With equal sagacity, they worked him at the tail of the pool to prevent him descending the rapid. * * * * With this race the fish began to tire, and the Otters continued to press him, until at length one of them having fixed him by the shoulder-fin, he was dragged up the bank, apparently quite dead.”

After some further details, which are too long to be here quoted, the writer adds, in the spirit of a true naturalist:—

“I could easily have shot them during their hunt, and more surely when trailing the fish up the bank, for they were not thirty paces distant,

and my double gun was loaded with BB (for Roe); but the intense interest of this chase left no other thought, and I was curious to see the end of their proceedings. Finally, descending from my tree, I carried home the salmon, which weighed twelve and a half pounds."

This graphic account of the way in which an Otter hunts and kills a fish shows what keen pleasure may be derived from observation of the habits of wild animals in their natural haunts. We commend it for general perusal, but especially for the perusal of those who, knowing little or nothing about natural history, never see or hear of an Otter without thoughtlessly devising measures for its destruction.

CHOUGHS, CROWS, AND ROOKS.

BY THE EDITOR.

IN a recent number (Zool. 1893, p. 332), allusion was made to the fact that the name "Chough" was in old time commonly applied to the Jackdaw. In addition to the illustrations already given (*l.c.*) of this use of the word, it might have been mentioned that the Jackdaw was so styled by Act of Parliament.

In the year 1533 (temp. Hen. VIII.) a statute was passed, the title whereof is 'An Act to destroy Choughs, Crows, and Rooks,' and the preamble runs as follows:—

"For as much as innumerable number of Rooks, Crows, and Choughs do daily breede and increase throughout this realm, which rooks, crows and choughs do yearly destroy, devour and consume a wonderful and marvellous great quantity of corn and grain of all kinds; that is, to wit, as well in the sowing of the same grain and corn, as also at the ripening and the kernelling of the same, and do make a marvellous destruction and decay of the coverture of thatched houses, barns, ricks and other such like, so that if the said *Crows*, *Rooks* and *Choughs* should be suffered to breed and continue as they have been in certain years past they will undoubtedly be the cause of a great destruction and consumption of a great part of the corn and grain which hereafter shall be sown throughout this realm, to the great prejudice, damage and undoing of the tillers, husbanders and sowers of the earth, within the same. For remedy whereof," &c. The statute enacted that every owner and occupier of land "should do as much as in him lay to kill and utterly destroy all choughs, rooks and crows coming, abiding, breeding or haunting on his lands on pain of a grievous amerciament."

Then followed numerous other provisions for the destruction of the unfortunate "*Choughs, Crows and Rooks.*"

The inhabitants of every parish were bound for the next ten years to provide and set nets in which to capture the birds, and were made liable to a fine of ten shillings for every day such nets should be wanting. A yearly meeting was to be convened of tenants, who were to survey the buildings and trees in their neighbourhood, and conclude by what means it would be easiest to destroy the young broods of the year. Any parish not complying with this regulation was to forfeit twenty shillings. By another section power is given to any person "minding to destroy the said *Choughs, Crows and Rooks,*" after request to the owner or occupier of the land where they bred, to enter thereon and carry them away "without let by the owner or occupier." The word "Chough" in this Act refers, of course, to the Jackdaw, which in former years was very generally known by that name.

By a later statute of Elizabeth, passed in 1566, and entitled 'An Act for the preservation of Grain,' the provisions of the Act of 1533 as to the keeping of "crow nets" were revived, but all the other branches of that Act repealed. By this statute power was given to churchwardens to assess the farmers in their respective parishes every year, and to expend the money thus obtained in rewards to be paid for the destruction of certain birds and animals supposed to be prejudicial to agricultural interests. A long list of rewards is fixed for heads and eggs of various "birds of destruction and noyful fowl," as, for instance, "for the heads of three old crows, choughs, pies or rooks, or of six young ones, or for six eggs, to be paid one penny." These rewards were regularly paid long after the passing of this Act.

In the old account books of the period are found entries which show that in some quarters at least an attempt was made to carry out the existing law. For example, in the Household Book kept by the steward of Squire Kitson at Hengrave Hall, Co. Suffolk,* commencing 1st Oct. 1572, we find the following entry:—

* Hengrave Hall, one of the finest Elizabethan buildings in this country, which has a history that may be called national, and which has been repeatedly illustrated in books and prints of architecture, has been sold, with 4500 acres of land, to Mr. John Lysaght, an ironmaster of Bristol.—*The Athenæum*, 7th Oct. 1893.

"1595. Oct. Nov. To the collectors of Chevington for the statute of Crows and destroying of vermin xxd."

Again, in the Churchwarden's Accounts at South Cadbury, in Somersetshire, commencing in 1590, very faded and imperfect, the following items occur:—

"1592	imprimis a Rooks nett	. . . . .	js.
1625	„ a Rooks nett	. . . . .
1627	for mending the Rook nett	. . . . .	js. vjd."

In the succeeding reign, however, it would appear from a memorandum made by John Aubrey, that although the statute was still unrepealed, it was either disregarded or not strictly enforced. In his notes for a 'Natural History of Wiltshire,' written between 1656 and 1691, and edited by John Britton, F.S.A., in 1847, the following paragraph occurs:—

"In the peacefull raigne of King James I. the Parliament made an Act for provision of Rooke-netts and catching Crows to be given in charge of Court-barons, which is by the stewards observed, but I never knew the execution of it. I have heard knowing countrymen affirme that Rooke-wormes, which the Crowes and Rookes doe devour at sowing time, do turne to chafers, which I think are our English locusts; and some yeares wee have such fearfull armies of them that they devour all manner of green things; and if the Crowes did not destroy these wormes, it would often times happen. Parliaments are not infallible, and some thinke they were out in this bill" (*op. cit.* p. 67).

We gather from this observation that the truth was then beginning to dawn upon agriculturists that the Rook, instead of being an enemy to crops, might be a useful ally in extirpating the destructive wire-worm.

The statute in question was cited as late as the year 1824, in the case of "*Hannam v. Mockett*," then tried in the Court of King's Bench.* The plaintiff in this action declared that he was "seised of a certain dwelling house with a vivary, there called a 'Rookery,'" which Rookery "was ornamental and advantageous to his said dwelling-house, and afforded great satisfaction and delight to him the said plaintiff," and he sought to recover damages against the defendant for maliciously firing guns near his Rookery, whereby the Rooks were so "disturbed and terrified"

* *Hannam v. Mockett*, 4 D. & R. 518; 2 B. & C. 934

that they "then and there flew away and wholly forsook the said Rookery." The plaintiff obtained a verdict, but the decision being appealed against, was ultimately reversed, the judges declaring, on the strength of the last-mentioned Act, that Rooks were considered by the legislature as a nuisance to the neighbourhood where they were, and that therefore no one could be held to suffer damage by being deprived of them.

As this statute, however obsolete, does not seem to have been repealed, it follows that the Rook has no legal *status* among us, but is, in the eye of the law, a trespasser and an outlaw. As these birds are not maintained at the expense of any individual or individuals, no one can have any property in a rookery built in his trees, or in the bodies of the rooks themselves if shot by a neighbour. And since they cannot be reduced into possession, they are not a subject of larceny. In other words, respecting Rooks which have their liberty (except when too young to obtain it, and then they are the property of the occupier), it has been decided, in the case above cited, that an action does not lie for shooting them, at the suit of the owner of the rookery, whether they are within or outside it, since they are not protected by the common or statute law.

As to the kind of net formerly known as the "Crow-net" or "Rook-net," a figure of it is given by Leonard Mascall in a folding-plate to his 'Booke of Fishing' (1590).*

It is thus described by Gervase Markham, in his *Art of Fowling*, 1621:—†

"Now for the generall way of taking these Land Fowle where many kinds are taken together, it is either to be done by day or night; if by day, then with the great net which commonly is called the Crow Net, which either is made of double twisted thred, or fine whip packe-threed, and it differeth nothing in length, depth, bignesse of mesh, manner of laying and

* A Booke of Fishing with Hooke and Line, and of all other instruments thereunto belonging. Another of Sundrie Engines and Trappes to take Polecats, Buzards, Rattes, Mice, and all other kindes of vermine and beasts whatsoever, most profitable for all Warriners and such as delight in this kinde of Sport and Pastime. Made by L. M. [Woodcut of fisher and fowler.] London. Printed by John Wolfe, and are to be solde by Edward White dwelling at the little North doore of Paules at the signe of the Gunne. 1590. sm. 4to.

† Hunger's Prevention or the whole Arte of Fowling by Water and Land. 12mo. London, 1621.

overturning from the Plover Nette (formerly spoken of in the Water Fowle), only if it be larger and the coards longer it is not amisse, this Net being before or neere unto Barn doores where Corne is a thrashing, or in any such place where Corne hath beene winnowed and the chaffe remaining, with which you shall ever observe to cover and hide the net as soone as it is laid, so as it may not be seen, and then as soone as the flockes of birdes come, and are scraping amongst the chaffe, you lying aloofe off conceald, with the coard in your hand, shall sodenly draw it and overturne the net upon the Birds, by which at one pull you may take many Crows" (p. 90).

This description has been paraphrased by Nicholas Cox, in his 'Gentleman's Recreation' (1674),* in the section "Of Fowling," without any acknowledgment of the source whence he derived it.

"The general way of taking these Land-fowl of several Sorts together, is either by Day or by Night. If by Day, it is done by the great Net, commonly called the *Crow-net*, and not at all differs in Length, Depth, bigness of Mesh, manner of laying, etc. from the *Plover-net*; only it will not be amiss if the Cords be longer.

"This net you may lay before Barn-doors, or where Corn hath been winnowed, also in Stubble-fields, so concealing the Net that the Fowl may not discern the Snare. When you perceive a quantity within the Net scraping for Food, and you lie concealed afar off, with your Cord in your Hand, suddenly pull the net over them."

The chief time for using this net would seem to be in the winter months, or at all events after harvest time, when the fields have been cleared. Richard Blome, in his 'Gentleman's Recreation,' a fine folio printed in 1686, thus describes (p. 145) "how to take wildfowl with a net called a *Crow-net*":—

"There is an Invention for taking *wild Fowl* in Winter with the *Crow-net*, which may be used in the Day time. It is made of double twisted thread, or fine packthread; the Meshes should be two Inches wide, the length about two Yards, and three in depth; It must be verged on the sides with good strong cord, and extended out very stiff upon long poles made for that purpose.

"When you are on the place you intend to spread your net, open it, and lay it out at its full length and breadth; then fasten the lower end of the net all along on the ground, so as only to move it up and down. The

* 'The Gentleman's Recreation; in four parts, *viz.* Hunting, Hawking, Fowling, Fishing.' There have been numerous editions of this book (1674, 1677, 1686, 1697, 1706, and 1721), which was at one time exceedingly popular, though only a compilation, and is even now esteemed by collectors.

upper end of the net should stand extended on the long cord, the further end thereof being staked fast to the earth by a strong cord about five yards distant from the net, which cord place in an even line with the lower edge of the net; the other end of the cord must be at least twenty-five yards, to reach unto some natural or artificial shelter, by the help of which you may lye concealed from the fowl, otherwise you can expect no good success.

"Your net must be in that exact order that it may give way to play on the fowl upon the least pull of your cord, which do smartly, lest the fowl be too quick for you.

"This device may be used for Pigeons, Crows, or the like, in corn-fields newly sown; as also in stubble-fields, provided the stubble conceal the net from the fowl. It may also be used for small birds, at barn-doors; but then lay for them some train of corn or chaff to entice them to the net lying concealed.

"This *Crow-net* may also be spread to great pleasure and profit in the mornings and evenings, where you know their haunts are; at which times in hard weather Fowl use to fly in great flocks to and from the land, with and against the wind; and then they fly close to the ground in open countries and low lands, which generally are not full of inclosures; and when they are within reach of your net, let go, and it riseth over them, and brings them back to the ground with a notable blow."

The author of 'The Sportsman's Dictionary, or the Country Gentleman's Companion,' 2nd ed., 8vo, London, 1744, after giving a description of the *Crow-net*, evidently borrowed without acknowledgment from one or other of the writers above quoted, adds:—

"The *Crow-net* may also be spread to great advantage and pleasure in the mornings and evenings, where you know their haunts are, at which time in hard weather fowl are wont to fly in great flocks, to and from the land, with and against the wind, and then they fly close to the ground in open countries and low lands, and when they are within reach of your net, let go and it will rise over them, and bring them back to the ground with a smart blow."

This net, in point of fact, much resembles the modern *plover-net*, which has been minutely described and figured by Sir R. Payne Gallwey in his 'Fowler in Ireland' (1882, p. 185).

Indeed, an Irish plover-catcher, still living, has declared that with this form of net he can catch Rooks when flying low against the wind.

In these more enlightened days, however, the persecution of Choughs, Crows, and Rooks is not only *not* enforced by statute, but Rooks at all events have come to be regarded with some

favour, as their natural habits and the nature of their food have become better understood.

Not many years ago it was the practice amongst farmers in some parts of the country to scatter poisoned grain broadcast, for the purpose, as they alleged, of destroying the Rooks, which they imagined to be hurtful to their crops. In this they were mistaken, for the evidence of ornithologists has sufficiently demonstrated many ways in which the Rook is useful to agriculturists; and the short-sighted policy of the farmers, resulting as it did in the wholesale poisoning of Partridges and Pheasants, the legislature had to interfere, and an Act of Parliament was passed in 1863, by which the use of poisoned grain was declared illegal.* The recently published 'Report of the Departmental Committee appointed by the Board of Agriculture to inquire into a Plague of Field Voles in Scotland' (1893), contains evidence of the repeated admissions by Scottish farmers that Rooks not only do good by devouring destructive larvæ, but are extremely useful in destroying large numbers of Field Voles, especially in the young stage, when they are found in the nests, which are systematically sought for and dug up.†

It seems strange that it should have taken 360 years to bring about this revulsion of feeling in the case of a bird which, being sufficiently familiar and everywhere common, may be so easily studied by those who will take the trouble to observe its habits.

NOTES AND QUERIES.

MAMMALIA.

Food of the Otter.—In the interesting article upon the Otter in the last number of 'The Zoologist' (p. 1), I see no reference to this animal's fondness for the common cray-fish, though another member of the same genus is mentioned as preying habitually upon a large spiny crab. Last spring, on the bank of a river not far from here, in which Otters were numerous (to judge from the evidence they left of themselves), I gathered up, and still have, a large handful of their dried droppings, which I found

* 'The Poisoned Grain Prohibition Act,' 1863, 26 & 27 Vict. c. 113.

† See the Index to the Report, under "Rooks."

were composed in about equal proportions of the remains of cray-fish and small fishes.—MILLER CHRISTY (Pryors, Broomfield, near Chelmsford).

Unusual abundance of the Bank Vole in 1893.—The Bank or Red Vole, *Microtus glareolus*, is generally supposed to be a somewhat rare animal, at least as compared to its brown relative the Short-tailed Field Vole, *Microtus agrestis*, and its occurrence in this or that county has been from time to time noticed in 'The Zoologist,' a distinction which has probably never befallen *agrestis*. During the past year, however, it seems to have been surprisingly abundant everywhere, for of a large number of Voles trapped and sent to the Natural History Museum by various friends who are aiding in the formation of a better collection of British small mammals, the majority have proved to belong to the Red species. Thus, beginning northward, of about thirty Voles sent from Elgin by Mr. W. R. O. Grant, all but two were *glareolus*; all those obtained in Cumberland by Mr. J. Paul, by Mr. E. W. H. Blagg in Staffordshire, by myself in Middlesex, and by Mr. R. J. Pocock in Dorsetshire, proved to be the same, while in the Isle of Wight I found the two species apparently equally numerous. All these collectors were trying to procure as many specimens as possible, irrespective of species. This reversal of the usual relative frequency of the two species seems worthy of mention in 'The Zoologist,' even though it may possibly be explained by the presumption that in order to conceal the traps more effectually they may have been placed oftener in hedges and copses than in the open fields, where *agrestis* is generally to be found. A second disturbing factor may be a difference in the readiness with which the two species will enter traps. The relative frequency of the different small terrestrial species may be a little gauged by the fact that the above-named five collectors, without special local knowledge, setting traps hap-hazard in likely places, caught about sixty *Mus sylvaticus*, fifty *M. glareolus*, ten *Microtus agrestis*, thirty *Sorex vulgaris*, one *S. pygmaeus*, and one *Crosopus fodiens*, in the course of the summer and autumn. No dormice or harvest mice were obtained. Any readers of 'The Zoologist' who may be able and willing to contribute specimens to the National Collection should send them to the Museum by post as soon as possible after they are caught.—O. THOMAS (Natural History Museum, Cromwell Road, S.W.).

Bank Vole in Oxfordshire.—Last December (1893) one of my nephews, at my instigation, began to trap field mice at Bodicote, and on the 29th he caught a male Bank Vole. Some time ago I picked up a partly-decomposed specimen at Bloxham; but I have never hitherto made any especial search for this species in Oxfordshire, and although, from its distribution in England, there is every probability of its being fairly common with us, I believe this is the first published record of its occurrence in this neighbourhood.—O. V. APLIN (Bloxham, Oxon).

BIRDS.

The Black Guillemot on the Solway Firth.—In 'The Zoologist' for October last, Mr. J. J. Armistead records (p. 295) the capture of a Black Guillemot on the Solway Firth, and states that it is only the second specimen he has seen there in seven years. It is certainly a species of considerable rarity within the actual limits of the Firth (that is within a line drawn betwixt Balmae Head and St. Bees), and I can only add two occurrences to that of Mr. Armistead's. Both of these were defunct examples noticed amongst the Common Guillemots, Razorbills, and Puffins, which at times strew the Solway shores—victims of some mysterious epidemic or more than usually severe storm, which now and again has destroyed these birds in thousands. Outside the Firth proper, but still within the Solway area, I do not think the Black Guillemot is so rare as is generally understood. I have been informed on reliable authority that it is pretty regularly seen at the breeding-place of the Common Guillemots at the Ross at the mouth of the Dee. The last time I was at the Scaur Rocks, which lie at the entrance to Luce Bay, midway betwixt Burrow Head and the Mull, a pair of Black Guillemots flew about during the three or four hours I was on the Big Scaur. The time was the last week in May, and I formed the strong opinion that this pair of Black Guillemots was nesting there. I know that towards the west of the Mull the Black Guillemot is an almost daily visitor in summer, and it would be strange if this were not so, for the species breeds at Ailsa Craig, and also at Rathlin Island, while it is generally understood that there is still a small breeding colony on the Isle of Man.—R. SERVICE (Maxwelltown, Dumfries).

Introduction of Red Grouse into N.W. Germany.—In the illustrated German sporting journal, 'Der Waidmann,' of the 13th October last, Count Kniphausen gives an account of his attempts to introduce Red Grouse from Scotland upon his domain in East Friesland, where an extensive tract of heather seemed to favour such an experiment. He says:—"In the autumn of 1891, I ordered from a game-dealer in England five pairs of live Grouse for my game-preserves near Wittmund in East Friesland, as an experiment in the way of naturalising this foreign game-bird with us. My prospects regarding this attempt did not appear to me unpromising, as I could offer the birds on my sporting domain freedom from disturbance, plenty of water, heather, and various berry-bearing plants, and patches of buck-wheat, to all of which these birds are said to be partial. The Grouse were transported across the North Sea in November. They were sent from Scotland *via* London and Flushing, the consequence of which was that, by reason of the long railway journeys, the birds suffered very much, and succumbed, chiefly, I fear, from want of water—at any rate, I only received one pair alive on their arrival at their destination. I had taken pains beforehand to erect for them, in a thicket, an aviary of wire-

netting, with canvas overhead, provided plentifully with water and buckwheat, and with the wire-netting stuck full of sprigs of heather, partly so that they might feel themselves more hidden, but chiefly because I understand that heather-tops are their chief source of nourishment. After a few days' rest, I had one of the sides of the enclosure raised, so that the Grouse might go out of their own accord. In the spring of 1893, I was rewarded by coming across the cock grouse in the company of a black cock on my preserve and had the pleasure of listening to his call. It also came to my knowledge that the hen was alive, and that she had incubated for about fourteen days, though too late in the year, for it was during the harvesting of the buckwheat that she was disturbed by the mowers. The cock and hen both flew away, and the hen, alas! never sought her nest again. The eggs, fourteen in number, I have preserved. This delightful discovery, that a pair of Grouse had lived all but two years on my property, and had even made a good attempt to rear a brood, made me resolve to go on with my experiments. The dealer to whom I addressed myself undertook, for twenty marks the pair, to deliver ten brace of Grouse to me, and we came to an understanding that he should send them at my cost from Hull to Bremen, that he should undertake their being carefully secured in boxes made expressly for the purpose, and that he should not be bound to make good any losses that might occur. Messrs. Weltmann, in Hull, who forward goods for the North German Lloyd's Company, kindly undertook the delivery of them, and promised to see that they did not want for food or water on their thirty-hours' sea voyage, and thus, to my joy, my gamekeeper, whom I had sent to Bremen to fetch the birds, was enabled to deliver to me the whole lot of seven brace (more were not to be had at the time), without loss or damage. The birds this time flew strongly when let out in their enclosure, but did not hurt themselves, owing to the canvas spread over the top. My sporting neighbours all belong to the Prussian and Oldenburg Forest and Moor Game Preservation Societies, to both of which I successfully applied, and they have, as before on the introduction of black-game, promised that for some years to come the protection of these Grouse shall be looked upon by them as a strict duty. So it is to be hoped that this attempt to naturalise them in the plains of North-West Germany may succeed, as it did with the black game, which had for many a long year been extinct there."

Notes from Greenland.—During a short sojourn, in January, 1893, in Copenhagen, I visited the Zoological Museum of that town, and noted some new acquisitions from Greenland. As 'The Zoologist' contains an extended report of my little book, 'The Birds of Greenland,' I think the readers will like a short record of the novelties I saw. The most recent acquisition of the Museum was a collection of bird-skins from Eastern Greenland north of 65° N. lat., collected by the Danish Expedition, which had recently returned from these tracts. I hope that eventually we may

have a detailed account of the Expedition, but as it surely will not come in a near future, I think a summary of the chief results will be acceptable. The most remarkable were two skins of *Anser segetum*, both taken in June, 1891 (as far as I remember on the 5th and 17th). This makes it probable that it breeds there. So far as I know, these are the first examples taken in Greenland or in America; but as the species commonly breeds in Iceland, it is perhaps remarkable that it has not long ago been met with in Greenland. I also saw a downy young of *Branta leucopsis* only a few days old. The exact place of capture of this and of the two *A. segetum* I cannot state precisely—only that it was about 70° N. lat., on the eastern shores of Greenland. Amongst other things which I saw, under the guidance of the Inspector of the Museum, Mr. H. Winge, was a skin from Greenland of the European *Hirundo rustica* (which I had not ventured to include in my 'Birds of Greenland'). *Somateria V-nigra*, also, must now be admitted as a bird of Greenland. I saw five skins from Godthaab, in South Greenland, taken by Mr. Krabbe. The V-marks of Nos. 1 and 2 were very distinct, as in *S. spectabilis*; in No. 5 the mark was not continuous, but consisted of only a few black feathers, which nevertheless were distinctly V-shaped. Nos. 3 and 4 were in transition between Nos. 2 and 5. That they could be hybrids between *S. mollissima* and *S. spectabilis* is quite out of question; sooner might No. 5 (and perhaps Nos. 4 and 3) be hybrids between *S. mollissima* and *S. V-nigra*. In all things—but the V-mark—they seemed to me to be perfectly like *S. mollissima*, and the transition observable in the skins might indicate that *S. V-nigra* is not a well-defined species. In conclusion, I may state that in a lot of bird-skins which I have got from Greenland, there is a skin of an adult *Crex pratensis* taken by Sükkertoppen in South Greenland on May 11th, 1892; on the label it is stated to be a male.—A. T. HAGERUP (Kolding, Denmark).

Mortality amongst Short-eared Owls in Scotland.—With the collapse of the Vole-plague, the great horde of Short-eared Owls which concentrated their numbers on the Vole-infested tracts in 1892-93 disappeared in November last. On some of the farms where fifty—or even more—pairs might easily have been counted, it is doubtful if even one pair remained on Nov. 13th. Here and there an odd one might still be found, but these were in most instances quite away from the places so sorely ravaged by the Vole myriads. Within the last fortnight of November I was shown a pair of Short-eared Owls, one of which had been shot as it flew from a tree. On going to pick it up another one was found lying dead just underneath where the first one had been perched. Both were in the last stage of emaciation. A curious fact—which shows how the working of natural laws is always in the direction of keeping down the undue predominance of any particular species—came under my notice the other day in reading a very interesting article in the 'Annals of Scottish Natural History,' by Mr. Peter Adair:—

A fox on Howpasley was suspected of a liking for lamb, and its earth was dug up. Besides a quantity of Grouse, Black-game, Partridges, Ducks, Curlew, Plover, Rats, Voles, and Lambs, the earth contained no less than seventy-six dead Short-eared Owls. Eight of these were old birds, and the remainder unfledged young. Of course, the nests of the Short-eared Owls being placed on the ground amongst the heather and long grass, the helpless young would fall an easy prey to a prowling Fox. One could hardly have suspected that Owls would have had any serious enemy except man himself.—ROBERT SERVICE (Maxwelltown, Dumfries).

Range of the Mediterranean Herring Gull, *Larus cachinnans*.—Mr. Backhouse, in his 'Handbook of European Birds,' quoting Mr. Seebohm, writes of this yellow-legged species:—"Resident in the Mediterranean and Black Seas, and ranges eastward through the Caspian and Aral Seas to Lake Baikal and the valley of the Amoor." But he makes no mention of its occurrence on the Atlantic seaboard. It may therefore be worth while to report that while we were coaling in quarantine at Madeira, on the 8th September, 1892, I had good opportunities all day of observing a little flock of yellow-legged Herring Gulls, which appeared to get their living chiefly from the leavings of ships putting in there. Also that on the 28th June, 1893, in the beautiful bay of Vigo (again, alas! under the yellow flag), a number of these gulls, young and old, were feeding on the bread, banana, orange-peel, and other *debris* thrown overboard after lunch, and enabled me to watch them at my leisure at close quarters. The yellow legs are very noticeable in the adult, but in the immature birds the legs are flesh-coloured. The cry was similar, to my remembrance, to that of our English Herring Gull.—O. V. APLIN (Bloxham, Oxon).

Green Woodpecker pursued by Sparrowhawk.—A few days before Christmas my gamekeeper was surprised to see a Green Woodpecker fly towards him, and pitch upon the trunk of a tree near which he was standing, without showing the slightest fear of his presence. It was closely pursued by a Sparrowhawk, which would doubtless have seized it had it not caught sight of the keeper and sheered off. Curiously enough, that very week the same man saw another Green Woodpecker chased by a Sparrowhawk. One would have supposed that the rapid undulating flight of a Woodpecker, now rising, now falling like a dart, would have quite baffled a hawk.—J. C. MANSEL PLEYDELL (Whatcombe, Blandford, Dorset).

Barred Warbler in Yorkshire.—An example of the Barred Warbler, *Sylvia nisoria*, was shot at Kilnsea, in Holderness, by Mr. G. E. Clubley, on the 13th November last, making the third reported occurrence of this species in that district. The first was obtained at Spurn by the Rev. H. H. Slater on the 28th Aug. 1884 (Zool. 1884, p. 489), and the second at the same place on the 19th Oct. 1892 (Zool. 1892, p. 424). It was first added to

the list of British birds by Prof. Newton on the acquisition of a specimen near Cambridge (Proc. Zool. Soc. 1879, p. 219), and it has also been met with twice in Norfolk (Zool. 1884, p. 493; 1889, p. 135), in Lincolnshire (Zool. 1892, p. 424), and in Co. Mayo (Zool. 1890, p. 310). Its occurrence, therefore, as a straggler from Europe to the British Islands seems to be fairly well established.—J. E. HARTING.

Swimming Powers of the Water Ouzel.—Perhaps the following, taken from my note-book on April 22nd last, may add further interest to the editorial note on this subject (pp. 23–24). Having found a nest of five young Dippers, I proceeded to take them, when one of them fluttered from the nest—which was built under the mossy stones of a small waterfall—into the stream below. Hurrying quickly down to save it, as I thought, from a watery grave, I was astonished to see it immediately dive, and swim under water with ease (chiefly with the use of its wings) to some stones at the water's edge, some eighteen to twenty feet distant. Making a feint to capture it, again it dived, and swam some three feet more before coming to the surface, and thus again and again did it dive to avoid my outstretched arm; but at last, not endeavouring to cross the pool, I restored it to its mossy home to wait until its pin-feathers should grow sufficiently before another venture, and then probably an aerial instead of an aquatic flight.—J. S. ELLIOTT (Dixon's Green, Dudley).

Nesting of the Spotted Flycatcher.—Referring to Mr. Whitaker's note in 'The Zoologist' for December last (p. 459), I may state that I have twice found the nest of this bird placed in a similar situation, both instances being in Highgate Woods six years ago. The first nest was placed in an open situation in the fork of a branch of a little crab-tree, and only four feet from the ground; it was the most perfect nest of the species I have ever met with. The second nest was in a fork in the centre of a hawthorn, and about five feet from the ground. The fork had previously held a Chaffinch's nest, which some one had removed, and the Flycatcher's nest was placed upon the remains of it. The majority of Flycatchers' nests I have seen have been placed against the trunks of oaks, or sometimes upon horizontal limbs. I have found one nest of this species in a hole in a pollard-willow, as far in as a Redstart would go, and another in a disused nest of the Blackbird, eleven feet up in the side of a haystack.—H. K. SWANN (Euston Road, N.W.).

A Brood of White Swallows.—During the past summer a brood of four white Swallows, *Hirundo rustica*, was reared in a shed at Bere Regis. Of these at least three survived as late as the month of October, when I saw them on Deverell Down in company with several other Swallows. They were apparently then congregating previous to migration, and I have little doubt that they contrived to leave the country unharmed.—J. C. MANSEL PLEYDELL (Whatcombe, Blandford, Dorset).

Lapland Bunting in Sussex.—The Lapp Bunting is a much commoner bird in the southern counties than many ornithologists suppose. For example, a few have been annually taken near Dover for the last dozen winters. Last year (1892) was an *annus mirabilis* for this species in Southern and Eastern Britain. This season, on the other hand, Lapp Buntings have been rare in Sussex; and although the birdcatchers know them well, only three were caught near Brighton in November. Two of these, fine strong male birds, were sent to me. Others have been taken near Dover as usual.—H. A. MACPHERSON (Carlisle).

Black Guillemot inland in Dorsetshire.—A bird of this species was driven inland by the storm of Dec. 19th, and was picked up alive on the following day at Milborne St. Andrew, a distance of sixteen miles from the sea.—J. C. MANSEL PLEYDELL (Whatcombe, Blandford, Dorset).

Snipe affected by Soot.—During the last frost, two letters appeared in 'The Times,' recording discoloured snow, and one of these attributed the discoloration to London smoke, although the writer lived at a considerable distance from London. I remember that I observed, when Snipe-shooting some years ago, that all the Snipe that I killed had their under parts discoloured, apparently by soot, and this was the case from about November till January. To the best of my recollection this happened in more than one season, and it must have been between 1877 and 1887, because the keeper who was with me when these sooty breasts puzzled us, was in my service during that period. I have never seen it since, however, although I have shot over the same beat more or less every year since. Can this have been London smoke also? The distance as the crow flies cannot be less than fifty miles from London, probably more. Certainly these birds may have soiled their breasts in some marshes nearer London, before they visited the district; but it seems odd that it has not occurred since those years.—W. OXENDEN HAMMOND (St. Alban's Court, near Wingham, Kent).

Uncommon Birds in Sussex.—Since writing to you about *Larus minutus*, I have seen three other specimens in the flesh, all of which were shot in this neighbourhood. One of these was an adult male, the others immature. The adult was shot on the 8th inst., on the coast between Hastings and Bexhill. The plumage was in good order, but the bird was in poor condition, weighing but four ounces. The feet and legs were of a coral-red colour, and not dark as in the immature birds. On the same day, as I learn from Mr. Bristow of St. Leonards, an adult male Kentish Plover was shot in this neighbourhood, and four Sheldrakes appeared on Pett Levell, one of which was shot. The thermometer on that day registered seventeen degrees of frost.—G. W. BRADSHAW (Hastings).

Wildfowl on the Sussex Coast.—You may perhaps like to insert in 'The Zoologist' a notice of various wildfowl which were obtained along the

Sussex coast during the late frost, with their respective measurements. An adult male Goosander, in splendid plumage, with very rich salmon-coloured breast, was shot at Havant on Jan. 8th. The shooter said it looked like a ball of fire coming towards him. Scaup with us have been the commonest of ducks. We have had some splendid males killed on our Sussex coast; also Mallard, Tufted Duck, and Merganser. A female Velvet Scoter was picked up alive in Mill's Terrace, West Brighton, in an exhausted condition after the severe weather. Snipe and Jack Snipe have been unusually abundant throughout Sussex, and several have been picked up dead. Teal, Brent Geese, Knots and Godwits have been shot on and near the river Adur. Bramblings and Wood Larks have occurred in small flocks. Most of the birds obtained appeared to be in good condition. We have taken weights of a few of the Ducks for you as follows:—Goosander, male, 3lbs. 13oz.; Scaup, adult male, 2lbs. 1½oz.; ditto, 2lbs. 3oz.; ditto, 2lbs. 4oz.; ditto, young female, 2lbs. 1oz.; Velvet Scoter, female, 1lb. 10oz.; Mallard, male, 1lb. 13oz.; Merganser, male, 1lb. 7oz.; Tufted Duck, male, 1lb. 12 oz.—PRATT & SONS (Brighton).

English and Irish Jays.—As I am in want of a few Jays (both English and Irish) for purposes of comparison, might I ask readers of 'The Zoologist,' who live in parts of the country where these birds are plentiful, to kindly send me one or two specimens, the receipt of which will be at once acknowledged.—G. E. H. BARRETT-HAMILTON (Trinity College, Cambridge).

Lapland Bunting in Lincolnshire.—The Lapland Bunting, *Plectrophanes lapponicus*, has appeared this winter on the Lincolnshire coast in considerable numbers. I first met with a flock at North Cotes on Dec. 21st, but they were so excessively wild that I was unable to identify them with certainty on that account, or to shoot a specimen. On the following day, however, with a south gale and heavy rain, I found the flock feeding under shelter of the sea-bank, and killed four at a shot, and shortly afterwards another single bird near the same place. This flock numbered from twenty to thirty birds, but subsequently I found many small parties of from two or three to half a dozen, scattered about amongst flocks of Larks in the vicinity. I saw this Bunting frequently up to Jan. 4th, the first day of the recent severe weather. On that day we had a violent easterly gale, with ten degrees of frost and a little snow. I saw at once that the Lapp Buntings had received a considerable accession to their numbers, and there must have been quite one hundred of them on the coast. I did not visit this locality again until the commencement of the thaw on Jan. 9th, and then saw two single birds only, both of which I shot. Since that date I have gone round all their old haunts several times without seeing a single individual. Probably the hard winter had driven them further south. While here they frequented grass land and young wheat; also the heaps of

rubbish thrown up by the tide on the edge of the saltings, invariably in company of Larks, the flocks sometimes containing a few Snow Buntings, Greenfinches or Reed Buntings. They appeared to perch even less frequently than the Snow Bunting, and I only once saw them alight on a hedgerow.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby, Lincolnshire).

Ostriches taking to the water voluntarily.—In your review of the ‘Dictionary of Birds,’ you quote Darwin and Dr. Cunningham in support of the fact of the American Rhea taking to the water voluntarily. I can give another instance of its doing so. On the 25th November, 1892, while riding along a river in Uruguay, which just there was free from “monte” in places, I saw about a dozen Rheas swimming across a broad laguna, perhaps rather wider than the Isis at Oxford. The habit is not common, I believe, for a river boundary is usually looked upon as an effective check to the bird’s wanderings. The weather was very hot and dry at the time, and this little flock of Ostriches had probably crossed the river in the hopes of finding better pasture, and were going home again disappointed, as I know they belonged to a camp on that side of the river for which they were making.—O. V. APLIN (Bloxham, Oxon).

Early Mention of the Waxwing in England.—Although well known to Sir Thomas Browne, who (as pointed out by Professor Newton in the fourth edition of Yarrell’s ‘Birds’) noticed this species in a letter to Dr. Merritt, dated Sept. 13th, 1668, the earliest record of its appearance in England seems to be that of two specimens which were killed near York in January, 1680 (old style), and which are described and figured in the ‘Phil. Trans.’ 1685 (p. 1161, fig. 9), by John Ray, from information supplied to him by Dr. Martin Lister. It is interesting, therefore, to find a record almost as early, if indeed it does not refer to the same year, no precise date being given, in the recently published Thirteenth Report (Append. Pt. 2) of the ‘Historical Manuscripts Commission.’ In that portion which relates to the MSS. at Welbeck Abbey (pp. 295–6) we find that Thomas Baskervill, in some notes on a journey from Oxford to Gloucester, in January, 1682–3, referring to Hosbury Bridge, four miles from Gloucester, writes:—“Here Thomas Stevenson did kill a strange bird [date not mentioned], which none in the country hereabout or elsewhere had seen before. This strange bird having another by it on the tree where we killed it, is near upon as big as a Wind-thrush; * upon the head and bill, which something resembles that of a Bull-finch, it hath a fine tuft of feathers of a cinnamon colour; the feathers of the neck, breast, back, and part of the

* ‘Wind-thrush,’ the Redwing; so called in Ireland (Rutty, ‘Nat. Hist. Dublin,’ 1772) and ‘Winnard’ in Cornwall (Couch, ‘Hist. Polperro’). Doubtless a corruption of Wine-thrush (Germ. *Wein-drossel*), from its fondness for frequenting the vineyards.—ED.

wings, something darker; the upper part of the tail where the feathers join to the body is ash-coloured, then a ring of black, and on the extreme part of the tail-feathers a ring of aurora flame, or gold colour, but under the tail a perfect cinnamon. The prime flying feathers of the wings are curiously diversified, for upon each wing, whose feathers are for the most part black, are white spots, answerable to each other. Then the extreme points of nine of the longest pinion-feathers are tipped with white and lemon or gold colour; the lesser pinion-feathers, which are seven in number, are tipped with white, and the extreme part of these seven feathers on each side are of a pure vermillion colour, but these vermillion tips are no feather, but of the nature of the stem of the feather, though dilated broader at the ends." This accurate and extremely intelligent description of the Waxwing (*Ampelis garrula*) makes it regrettable that so capable an observer as Mr. Thomas Baskervill did not devote more of his Journal to the birds which he met with in the course of his itineraries, which, though full of interest, give what in the present day we should consider an undue prominence to the excellence of the inns at which he "lay" and the good cheer which was there to be obtained.—T. SOUTHWELL (Norwich).

Red-breasted Snipe in Ireland.—On October 11th, 1893, I received from County Tipperary, Ireland, an adult female of the Red-breasted Snipe, *Macrorhamphus griseus*, changing to winter plumage. Professor Newton, who has examined this bird, gives its dimensions as—bill, 2.65; tarsus 1.5; wing, 6. It will be seen that these measurements closely approach those of the supposed western form, but it seems to me that eastern and western forms cannot be with certainty distinguished. Lord Lilford has had a figure of this specimen drawn for his 'Illustrations of British Birds.'—F. COBURN (Holloway Head, Birmingham).

Common Scoter in Warwickshire in August.—On August 7th, 1893, Mr. H. C. Grove shot a Common Scoter, *Ædemia nigra*, on Powell's Pool, Sutton Park, Warwickshire. The bird is apparently an immature male, but it had been roughly skinned, and the skin was nearly putrid when I got it, so that I cannot positively state the sex. The date seems a most extraordinary one for this bird to be found at such a spot. Mr. Grove suggested that it had probably been bred in the park, but there is no proof whatever to support this supposition. No other birds of its kind were seen in the pool, but later Mr. Grove shot a female Pochard. This is the first record I have of the Common Scoter for Warwickshire.—F. COBURN.

Uncommon Birds in the Isle of Man.—Mr. G. Adams, taxidermist, of Douglas, Isle of Man, has shown me a Little Auk, *Mergulus alle*, which was sent him from Peel, for preservation, in the last week of December. It displays a considerable amount of dark mottling on the lower part of the front of the neck. He has also a Grebe which, from its medium size and

short straight beak, I take to be *Podiceps auritus*. This specimen was obtained in a trammel-net at Derby Laver, also toward the end of December. It is a very pure dark and white plumage, with no trace of tufts about the head. The Goldfinch, *Carduelis elegans*, a bird which, though twenty or thirty years ago abundant, has lately been very scarce, is again showing itself more commonly in various districts this winter. On Christmas-day I saw at Tromoole, one mile from here, a flock of some seven or eight Long-tailed Tits, *Acredula rosea*. This appears to be only an occasional visitor to this island.—P. RALFE (4, Queen's Terrace, Douglas, I.M.).

Wildfowl on the Norfolk Coast.—On Jan. 12th I received in the flesh from Hunstanton, Norfolk, a female Eider and a Black Guillemot, and, a few days later, a fine mature male Long-tailed Duck, the first fully adult drake I ever saw in the flesh, though females and young males are common enough. All these birds were shot off Hunstanton during the severe weather, and I am indebted for them to the kindness of Dr. Whitby, of Hunstanton, St. Edmunds. In addition to locally-shot examples of the birds mentioned above, that gentleman's interesting collection contains, among other rarities, examples of the King Eider, Gull-billed Tern, Iceland Gull, and Sand Grouse shot in 1863 and 1888, all obtained within a few miles of Hunstanton.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Little Auk in Co. Sligo.—On the 27th of December last I received a fresh specimen of the Little Auk, *Mergulus alle*, which was found alive about four miles from the sea, but died shortly after capture. Another specimen was shot on Lough Gill, Co. Sligo, and is now in the possession of Mr. Owen Wynne, Hazelwood, Co. Sligo.—R. M. CLELLON (Castle St., Sligo).

Turtle Dove Breeding with Common Dove in Confinement.—*A propos* of the note on Ring Dove pairing with Domestic Pigeon (p. 23), I may state that a male Common Dove, which I have had in my aviary for some time, paired with a female Turtle Dove, and successfully reared two hybrids. I would like to know if it is a common occurrence. The Dove which I have called the Common Dove is the ordinary cream-coloured bird with black ring round neck, which is commonly kept in confinement. The female is the wild Turtle Dove, *Turtur communis*.—W. WILLIAMS (19, Garville Road, Rathgar, Dublin).

REPTILES.

Curious Accident to an Adder.—A few years ago I killed an Adder, *Pelias berus*, under singular circumstances. I was walking down a hedge-row in the company of two of my brothers, when we saw an Adder glide over a bank a few yards in front of us. When we got to the spot we were surprised to see it hanging by the throat to the spike of a male bramble. We watched it for some time making frantic efforts to escape; it was, how-

ever, so firmly fixed that I had time to fetch a pair of sheep-shears from a farmhouse about a mile away, with which I cut off its head, as we wished to see how deep the prickles had penetrated. The bramble was about a yard from the bank, and where the Viper was hanging was about 2 feet from the ground. It seemed to us that the Adder must have made a spring from the top of the bank. This occurred at Crowboro' Warren, Sussex.—R. H. RAMSBOTHAM (Beetham, Milnethorpe).

CRUSTACEA.

The Crayfish.—Last December, whilst dissecting the Common Crayfish, *Astacus fluviatilis*, I had one, a female, with *three* genital pores, the extra one being on the thirteenth appendage, or third leg (according to Prof. Huxley's nomenclature) on the left side (or right side when on its back); the oviduct leading to these two was bifurcated just before the entrances to the pores, and the ovaries were full of ova. I preserved the specimen, but unfortunately spoilt the dissection of the oviduct in trying to preserve it.—J. N. SMITH (30, Shooters Hill Road, Blackheath, S.E.).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

December 21, 1893.—Prof. STEWART, President, in the chair.

Gen. Sir H. Collett and Mr. H. H. Johnson were admitted, and Messrs. G. E. Greene and A. G. Tansley were elected.

Mr. P. L. Simmonds exhibited a collection of New Zealand mosses found by Mr. G. W. Simmonds while surveying in H.M.S. 'Pandora.' Mr. Murray offered some critical remarks on the nature and value of the collection, which the owner was understood to say would be presented to the Botanical Department of the British Museum.

The President exhibited and described two curious examples of associated ants and plants, namely, *Iridomyrmex caudatus*, with *Myrmecodia beccari* and *Camponotus planatus*, with *Pseudomyrma belti*, the plant being *Acacia hindsi*.

Mr. J. E. Harting exhibited some shells of *Planorbis corneus*, which had been found by the river-side at Weybridge, and which from some unascertained cause were curiously bisected. Alluding to the piscivorous habits of the Water Shrew, *Sorex fodiens*, he suggested that it might be the work of this little animal. Mr. A. D. Michael thought it likely to be the result of frost, the lower half of each shell being preserved by being imbedded in or adherent to the frozen mud.

Referring to a MS. letter of Dr. Stephen Hales (the author of 'Vegetable

Statics,' and a friend and neighbour of Gilbert White), which was exhibited by Mr. G. Murray, an excellent engraved portrait of him was exhibited by Mr. Harting, who made a few remarks upon his life and work. As this portrait was not to be found amongst the 600 engravings of 'Scientific Worthies,' lately presented to the Library by the late Lord Arthur Russell, he offered it for the acceptance of the Society.

On behalf of Mr. H. N. Ridley, Director of the Gardens and Forests Department, Singapore, the Secretary read a paper dealing with all the *Orchideæ* hitherto recorded from Borneo. In the discussion which followed Mr. C. B. Clarke made some interesting remarks on the distribution of these plants in the Indian and Indo-Malay Regions, and on the way in which a knowledge of the species had been gradually acquired and extended.

On behalf of Mr. R. Spruce (whose unexpected death the Society had recently to deplore), Mr. A. Gepp read a paper on the *Hepaticæ* collected by Mr. W. R. Elliott in the islands of St. Vincent and Dominica, and took occasion to describe in some detail the nature and extent of Mr. Spruce's work, which he characterised as a most careful and excellent contribution to botanical science. The paper was accompanied by a series of minute and beautiful drawings.

January 18th.—Mr. W. CARRUTHERS, F.R.S., V.-P., in the chair.

Messrs. T. B. Cato, W. Elborne, and R. E. Leach were admitted, and the following were elected:—Sir Hugh Low, Messrs. G. B. Rothera and Thomas Sim.

The Chairman, before proceeding to the business of the evening, referred to the loss which the Society had sustained by the recent death of Mr. Richard Spruce, who had travelled and collected much in South America, and who was the recognised authority on *Hepaticæ*. It was much to be regretted that having but lately presented to the Society a valuable paper on this subject, containing descriptions of a great number of new species, and illustrated with careful and beautiful drawings, he had not lived to see the published result of his labours.

The Chairman also referred with regret to the death of Mr. Algernon Peckover, of Wisbeach, who had been a Fellow since 1827, and who by his will had bequeathed to the Society a legacy of £100.

Mr. E. M. Holmes exhibited a flowering specimen of a new species of *Cascarilla* (*C. Thomsoni*) and the bark of the tree, from New Grenada; also two new foreign sea-weeds, *Gelidium Beckeri*, from South Africa, and *Leptocladia Binghamiæ*, from California, and three new British marine Algæ, viz. *Entophysalis granulosa* and *Symplaca atlantica*, from Swanage, collected by himself, and *Vaucheria coronata*, from Arbroath, collected by Mr. J. Jack.

Mr. Thomas Christy exhibited and made observations upon some remarkably long tendrils of *Landolphia Kirkii*, which served as an illustration to a paper subsequently read by Mr. Henslow.

Mr. J. E. Harting exhibited and made some remarks upon the plant-débris ejected in the form of "pellets" or "castings" by Rooks, and stated that a number of these pellets which had been examined were composed of the cuticles of the succulent roots of the couch-grass, *Triticum repens*, commonly called "scutch," "squitch," and "twitch"-grass, a most troublesome weed to the farmer. Mr. Harting also exhibited a rare Australian duck, *Stictonetta nævosa*, Gould, which had been obtained at Gippsland Lake, Victoria, and of which very few examples were to be found in collections.

A paper was then read by the Rev. G. Henslow, M.A., on the origin of the structural peculiarities of climbing stems by self-adaptation in response to external mechanical forces. The purport of this paper was to prove by an appeal to facts and experiments the existence of the power in living protoplasms of responding to external and purely mechanical forces by enveloping supportive tissues, by means of which the plant is enabled to resist the effects of gravity, tensions, pressures, &c. In the case of climbers, not only is this principle illustrated wherever a force is felt; but whenever a stem is relieved of a force atrophy or arrest of mechanical tissues takes place, supplemented, however, by an increase in the number and size of vessels. The conclusion arrived at was that while, on the one hand, the peculiar structures of climbers are all the outcome of a response to the external mechanical forces acting directly upon the stems, such structures are precisely those which are most admirably suited to the requirements of the stems themselves. The variations of structure characteristic of species, genera, and orders of climbing plants have been thus acquired in a definite direction, *viz.* of direct adaptability, this being effected, according to Mr. Darwin's statement, "without the aid of natural selection." The paper was criticised by Dr. D. H. Scott, Prof. Reynolds Green, and Mr. G. Murray, who, while testifying to the number of interesting facts brought forward by Mr. Henslow to support his views, were yet unable to agree with him in some of his conclusions. The paper was illustrated by a great variety of specimens and drawings, and was listened to with considerable interest by a very full meeting.

ZOOLOGICAL SOCIETY OF LONDON.

January 16th, 1894.—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of December, 1894.

Mr. Selater exhibited and made remarks on a drawing of the head of a Monkey, *Cercopithecus erythrogaster*, in the Paris Museum, forwarded to him by M. Pousargues, of that institution.

An extract was read from a letter received from Mr. C. B. Mitford, describing an invasion of Locusts observed at Free Town, Sierra Leone. Mr. C. O. Waterhouse had referred the specimens of these insects sent home to *Pachytylus migratoroides*. A further extract from the same letter gave an account of the occurrence of Elephants in the district of Sierra Leone.

Mr. R. Lydekker gave an account of some of the principal objects observed during his recent visit to the La Plata Museum, calling special attention to the splendid series of remains of Dinosaurian Reptiles, of Cetaceans, and of Ungulates of three different suborders. Mr Lydekker also made remarks on some of the specimens of Edentates and of the gigantic birds of the genus *Brontornis*, and further exhibited a painting of the head of a Wild Goat, *Capra agagrus*, of unusual size.

On behalf of Mr. J. Jenner Weir, a specimen of the Tsetse Fly, *Glossinia moristans*, from the Transvaal was exhibited.

Mr. Tegetmeier exhibited a curiously barred variety of the Common Pheasant.

A communication was read from Prof. W. N. Parker, containing remarks on some points in the structure of the young of the Australian Echidna.

A communication was read from Mr. Roland Trimen, giving an account of a collection of Butterflies made in Manica, Tropical South-east Africa, by Mr. F. C. Selous in the year 1892. Of 166 species represented in the series, 44 were stated to be of general distribution, and of the remainder (amongst which were 9 apparently new to science) 26 were peculiar to the South-Tropical area of Africa.

A communication received from Dr. A. B. Meyer contained remarks on a rare African Monkey, *Cercopithecus wolffi*, accompanied by a coloured drawing.

Dr. A. Günther gave an account of a collection of Reptiles and Fishes made by Dr. J. W. Gregory during his expedition to Mount Kenia. The collection contained examples of thirty-seven species of Reptiles, nine of Batrachians, and thirteen of Fishes. Several species of Reptiles were new to science, amongst which were two new Lizards—*Bunocnemis modesta*, g. et sp. n., of the family *Geckotidæ*, with imbricate scales and large scattered conical tubercles on the hinder part of the hind limbs; and *Agama gregorii*, to *A. cyanogaster*, but with lateral, not tubular nostrils. Six new fishes allied were also characterized and named:—*Chromis niger*, *C. spilurus*, *Alestes affinis*, *Labio gregorii*, *Barbus tanensis*, and *B. taitensis*.—P. L. SELATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

January 17th, 1894.—The 61st Annual Meeting.—Mr. Frederic Merrifield, Vice-President, in the chair. An abstract of the Treasurer's accounts, showing a balance in the Society's favour, having been read by Mr. J. Jenner Weir, one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1894:—President, Mr. Henry J. Elwes, F.L.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. Walter F. H. Blandford, M.A., F.Z.S., Mr. Charles J. Gahan, M.A., Mr. Frederic Merrifield, Prof. Edward B. Poulton, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., Mr. George H. Verrall, Mr. James J. Walker, R.N., F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. Mr. Merrifield then read the President's Address, in which, after alluding to the principal events of the past year, and the prosperous condition of the Society, he referred to the additions which had been made in 1893 to the literature of Entomology, calling attention to the 'Butterflies of China and Japan,' by Mr. J. H. Leech; the 'Moths of India,' by Mr. G. F. Hampson; the 'Butterflies of North America,' by Mr. W. H. Edwards; 'Lepidoptera Indica,' by Dr. F. Moore; and the continuation of the 'Biologia Centrali-Americana,' by Messrs. F. D. Godman, F.R.S., and Osbert Salvin, F.R.S. He also commented on the recent publications of the Grand Duke Nicholas Mikhailovitch, Mons. Charles Oberthür, and Dr. Staudinger, on the Continent. The President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Prof. H. A. Hagen, M.D., the Rev. Leonard Blomefield, M.A., Mr. A. C. Horner, M.R.C.S., Prof. J. Wood-Mason, the Rev. Henry Burney, M.A., Mr. J. C. Bowring, F.L.S., the Rev. F. O. Morris, B.A., Mr. J. Batty, Mr. Francis P. Pascoe, F.L.S., Herr Eduard Honrath, and Dr. Adolph Speyer. A vote of thanks to the President for his Address was proposed by Colonel Swinhoe, seconded by Mr. Jenner Weir, and carried unanimously. Mr. Merrifield replied for the President. Lord Walsingham proposed a vote of thanks to the Officers of the Society; this was seconded by Mr. Waterhouse, and carried unanimously. Mr. McLachlan and Mr. Goss replied, and the proceedings terminated.—H. Goss, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The Tercentenary Edition of the Complete Angler, or Contemplative Man's Recreation. By IZAAK WALTON & CHARLES COTTON. Edited, with Notes from a Naturalist's point of view, by J. E. HARTING. 2 vols. 4to. London: Bagster & Sons. 1893.

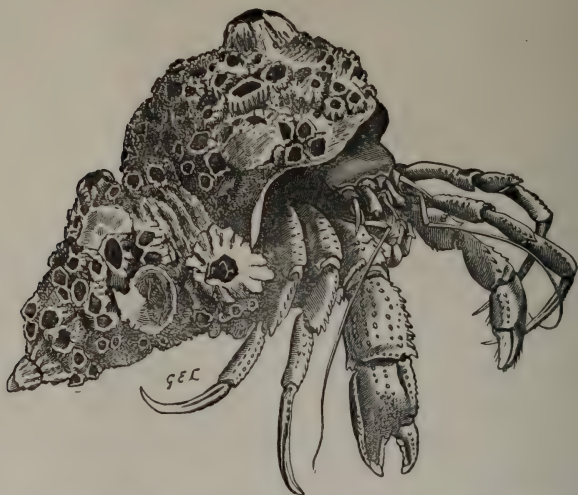
SOME years ago, when noticing the publication of a facsimile reprint of this esteemed book (Zool. 1882, pp. 357-360), we gave a list of the various editions which were then known to exist, and which at that time, on the authority of Messrs. Westwood and Satchell, were said to number no less than eighty-seven. Since that review appeared there have been several fresh issues, including a beautiful reprint of Major's edition published by Messrs. Nimmo and Bain in 1883, with original etchings, and all the illustrations laid down on india-paper. Then we have had Mr. Robert Marston's handsome quarto, and one or two others of less importance.

It is curious to note how, in all these editions, the natural history lore of Izaak Walton has been neglected. His critics, as perhaps was only natural, have been fishermen who looked at the practical value of the book, although others, like Sir John Hawkins and Sir Harris Nicholas, have shown considerable literary research in their annotations, dealing with a variety of subjects that have little or no connection with fishing, beyond the fact that some allusion is made to them by Walton. And yet there is a good deal in the book to attract the curious naturalist, especially if his tastes incline to the antiquarian side of natural history, and he have some acquaintance with old authors. To such a one it is pretty evident that Walton was not what would be termed in these days an observant out-door naturalist. He used his eyes, no doubt, so far as they served his purpose as an angler; but most of his ideas about animals and plants seem to have been derived from the books he read rather than from actual observation. He was truly a "contemplative man," and turned his reading to account. Such books as Dr. Philemon Holland's translation of 'Pliny' and of Camden's 'Britannia,'

Bacon's 'Sylva,' Topsell's 'Historie of Four-footed Beastes,' Sylvester's translation of 'Du Bartas,' Drayton's 'Polyolbion,' Gerard's 'Herbal,' Montaigne's 'Essays,' and Dr. Hakewill's 'Apology or Declaration of the Power and Providence of God in the Government of the World,' were amongst his favourite authors; and from these and others he borrowed and paraphrased as occasion suggested, sometimes with acknowledgment, sometimes without. His want of knowledge as a naturalist often led to his quoting fable as fact, and to his confounding the habits of one animal with those of another of quite a different species. At the same time his knowledge of zoology and botany must be gauged, not by our standards of the present day, but by the state of knowledge on those subjects put in evidence by the authors from whom he quoted.

To give Izaak Walton his due in this respect, to show the extent of his acquirements as a naturalist, and to point out some of the errors into which he has fallen, may be said to constitute the *raison d'être* of the present edition, which marks the tercentenary anniversary of the author's death and the centenary of the publishing house of Bagster. It may be observed that so long ago as 1808, Mr. Samuel Bagster published an edition of the 'Complete Angler,' which was edited by Sir John Hawkins and was so well received that several issues of it appeared, both in quarto and octavo. The notes to that edition, though sometimes very discursive, and even irrelevant, are in other passages very much to the point and worth quoting at the present day, as the reader of the new edition will find. The same publisher, many years ago, commissioned Hayter to visit Salisbury for the purpose of copying the excellent portrait of Walton by Housman, which forms the frontispiece to the first volume of the present edition. He also accompanied John Linnell to Ashbourn, in Derbyshire, to copy the portrait of Charles Cotton by Sir Peter Lely, which forms the frontispiece to the second volume of this work, Linnell availing himself of the opportunity to sketch some of the charming scenery amidst which Izaak Walton and his friend Charles Cotton were in the habit of fishing together. From these sketches Mr. Percy Thomas has produced some beautiful etchings which, printed on Japanese vellum, form most appropriate illustrations to the volumes before us. It may be a matter of opinion amongst art critics whether it was worth while to

re-issue in this edition Audinet's engravings from Wale's pictures, seeing that they are neither new, nor altogether free from defects; but it may be observed that they have been so admirably printed on vellum, at the Ballantyne Press, as to give them a *cachet* which they never had before, and so to make the very best of them.



THE HERMIT CRAB, *Eupagurus bernhardus*, IN SHELL OF WHELK
ENCRUSTED WITH BARNACLES.

Then we have Mr. George Lodge's pretty text-cuts of river-side animals and birds, produced with a fidelity which is only possible where the wood-blocks are drawn and engraved by the same hand. This is a gift which very few artists possess, and seeing that it obviates all risk of misinterpretation, is to be valued accordingly. The Heron flying with characteristic flap of wing, the Bittern cowering amongst the sedge, the Polecat which loves to track the Eel at night through the wet riverside grass,* the Marten which haunts the rocky and wooded glen through which the trout-stream runs, the Hermit Crab which seeks seclusion in the empty shell of a Whelk, and the Lark and Nightingale which delight the listening ear of the fisherman, are

* See 'The Zoologist,' 1891, p. 292.

all here faithfully pourtrayed, with others, in their natural and characteristic attitudes.

This is not the place, for obvious reasons, wherein to criticise the editor's annotations, but it may be of interest to mention a few of the subjects alluded to by Izaak Walton which in this new edition have elicited comment, explanation, or elucidation.



THE MARTEN, *Martes sylvatica*.

There is a pretty allusion (vol. i. p. 47) to "the honest Robin that loves mankind both alive and dead," referring of course to the old notion of the Redbreast covering the dead with leaves which has been noticed by Shakespeare in 'Cymbeline,' and by John Webster in the lines—

"Call for the Robin Redbreast and the Wren,
Since o'er shady groves they hover,
And with leaves and flowers do cover
The friendless bodies of unburied men."

Auceps, in his enumeration of the several kinds of hawks used by falconers (p. 50) includes "the *Stelletto* of Spain, the *Blood-red Rook* from Turkey, the *Waskite* from Virginia." What species are referred to by these names? and where did Walton find allusion to them? Perhaps some of our readers can supply this information.

It is not surprising that he should describe a Whale as a fish (pp. 59 and 69), seeing that many persons so regard it even at the present day, in spite of all the science-teaching in schools.

Again, who is "the ingenious Spaniard" (p. 67) who says that "rivers and the inhabitants of the watery element were made for wise men to contemplate, and fools to pass by without consideration?" The sentiment has been generally attributed to Juan Valdesso, but is not to be found in his 'Considerations,' which was translated at Oxford by Farrar in 1638.

Some of the "many strange creatures collected by John Tradescant, and others added by my friend Elias Ashmole, Esq., who now keeps them carefully and methodically at his house near to Lambeth, near London," are described (p. 71). They were subsequently removed to the Ashmolean Museum at Oxford, and are mentioned in a catalogue of the collection entitled 'Museum Tradescantium,' printed in 1656, or three years after the publication of the first edition of 'The Complete Angler.'

The Cuttle, *Sepia officinalis*, is curiously confounded with the Angler-fish, *Lophius piscatorius*, of which an illustration is given (p. 74), to remove misconception. The habits of the Hermit Crab, *Eupagurus bernhardus*, of which also a figure is given, and here reproduced, are thus quaintly noticed:—

"And there is a fish called a Hermit, that at a certain age gets into a dead fish's shell, and like a hermit dwells there alone, studying the wind and weather, and so turns her shell that she makes it defend her from the injuries that they would bring upon her."

The habits of the Otter are perhaps more copiously described than those of any other animal mentioned by Walton, and a characteristic and quite unconventional figure of the beast, by Mr. G. E. Lodge, is given (p. 92) from life. Of course, Walton's idea about the use of the herb *Benione* to keep away Otters from fish-ponds (vol. i. p. 92; vol. ii. p. 64, n.), was derived from Topsell's 'Historie of Four-footed Beastes,' 1607, which, in turn, was mainly a translation of Gesner's 'Historia Animalium.'

The antiquity of fish-hooks is alluded to (vol. i. pp. 65, 80), as also of fish-bowls for keeping fish in dining-rooms (p. 110). Five years before the date of Walton's fifth edition, viz. in 1671, Dr. Martin Lister published 'A Table of Spiders found in England,' enumerating "thirty and three kinds." Walton, who quotes this fact, would be astonished (were he living now) to know that in Great Britain alone more than 500 species have been described.

The caterpillars of the Privet Hawk-moth, *Sphinx ligustri*, and of the Puss-moth, *Dicranura vinula*, are fairly well described, sufficiently so, at least, for identification.

Amongst some of the fables retailed we find, of course, the story of the supposed generation of Barnacle Geese from the cirrhiped *Lepus anatifera*, as noted by Du Bartas:—

“ So rotten planks of broken ships do change to barnacles,”

and by Gerard, in his ‘Herbal,’ and Camden, in his ‘Britannia.’ So also we note the allusion to the belief that “Hares change sexes” (i. p. 173).

The distribution of the Grayling in English rivers is discussed (i. p. 183), with a note elucidating the subject, and an interesting point is raised (p. 188) as to when the Salmon became extinct in the Thames. The vexed questions affecting the reproduction of Eels, and of Snakes swallowing their young in time of danger, are fully dealt with in foot-notes by the editor (ii. p. 2, and i. p. 203), and, in view of the authorities quoted and evidence adduced, may be said to set these matters at rest.

As to the plants, the notes furnished on lady-smocks and culver-keys (ii. 28), candocks (ii. 63), willow-catkins (ii. 185), reates, roits, or water-crowfoot (ii. 63), pickerel-weed (i. 194, 204), hops (i. 215), and many other species, show that in this old fishing-book the botanist may find almost as much to entertain him as the zoologist.

It is a curious and remarkable fact that Izaak Walton nowhere quotes Shakespeare, although the latter died in 1616, and the first folio edition of his plays was published in 1623, or thirty years before the appearance of ‘The Complete Angler.’

This omission cannot be due to the absence of allusions to fish and fishing by the bard of Avon, for Walton might have referred to ‘Twelfth Night’ (ii. 5), where Maria, on the appearance of Malvolio, exclaims, “Here comes the Trout that must be caught with tickling,” and to the song of Caliban in ‘The Tempest’ (ii. 2), “No more dams I’ll make for fish,” as well as to the lines in ‘Much Ado’ (iii. 1):—

“ The pleasantest angling is to see the fish
Cut with her golden oars the silver stream,
And greedily devour the treacherous bait.”

But Shakespeare, although a "contemplative man," seems to have found but little "recreation" in fishing, and it is perhaps on this account that Walton has evinced no appreciation of his immortal verse. Michael Drayton, however, his "honest friend," is often quoted.

Monograph of the North American Proctotrypidæ. By WILLIAM H. ASHMEAD. Bulletin of the United States Natural History Museum, No. 45. 8vo, pp. 472. With eighteen plates. Washington Government Printing Office. 1893.

THE *Proctotrypidæ* are considered by some authorities to be closely allied to the *Chalcididæ*, and in a systematic arrangement of the hymenopterous families usually follow them in our manuals and catalogues. Mr. Ashmead, however, who in this volume has worked out the species found in America north of Mexico, considers that they have but little affinity with the *Chalcididæ*, and that this arrangement is unnatural. They are in every respect, he believes, more closely allied to the Hymenoptera-Aculeata, the *Chrysididæ*, *Scoliidæ*, *Mutillidæ* and *Thynæidæ*, while in the Terebrantia they approach closest to the parasitic *Cynipidæ* (Allotria, Eucoila and Figites). In a natural arrangement, therefore, he considers they should be placed at the head of the Terebrantia, for after the removal of the group *Mymarinaæ*, which (agreeing with Halliday) he regards as forming a separate and distinct family allied to the *Chalcididæ*, there is no relationship with the last named. With the *Mymarinaæ* removed, there will be no difficulty in distinguishing at a glance a Proctotrypid from a Chalcid. In all true Proctotrypids the pronotum extends back to the tegulæ, and the ovipositor issues from the tip of the abdomen, the sheaths, except in a few abnormal cases, being conjoined and forming a more or less cylindrical tube or scabbard for the reception of the two spiculæ and the ovipositor proper; whereas in all Chalcids the pronotum never extends back to the tegulæ, and the ovipositor issues far anterior to the tip of the abdomen, reposing in a central slit or groove, while the sheaths are always distinctly separated, never conjoined.

From the families of the Aculeata they are separated by having (except in a few cases) 2-jointed trochanters, and in

venational and antennal characters. All Aculeate Hymenoptera, with few exceptions, have the antennæ 12-jointed in the female, and 13-jointed in the male, while in the *Proctotrypidæ* such is not the case; either both sexes have the same number of joints, or a less or greater number in the opposite sex.

Before dealing with the systematic description of the divisions, genera and species, Mr. Ashmead enters very fully upon a description of the external structure, habits of the perfect insects, transformations or life-history, distribution and classification, subjects which occupy the first thirty pages of the volume.



PROCTOTRYPES, Latreille.

Then follow detailed descriptions of all the species, with the *habitats*, and an indication, in nearly every case, of the collection in which the type or types are to be found. The volume concludes with several pages of bibliography, which the reader will find extremely useful.

As a piece of thorough good work, and a valuable contribution to entomology, it may be recommended as a model to future monographers.

The Birds of Derbyshire. By F. B. WHITLOCK; annotated with numerous additions by A. S. HUTCHINSON, Taxidermist to the Derby Museum. 8vo. Pp. 239. With a Map and Six Illustrations. London and Derby: Bemrose & Co. 1893.

MR. WHITLOCK'S name will be well known to the readers of this journal as that of an enthusiastic ornithologist, and his zeal has prompted him to try and write a book about the birds of his county. This very laudable design he has carried out, no doubt to the best of his ability; but it seems to us that his book might have been very much better if he had not been in such a hurry to publish it. It is evident that he had not sufficient materials for the purpose, as may be gathered from two or three circumstances. We have been surprised to find no reference to the most important collection in Derbyshire, that of Sir Vauncey Crewe at Calke Abbey, a collection which includes many very noteworthy birds obtained in the county; while in his endeavour to extend his list of species, Mr. Whitlock seems to have travelled quite outside the limits of the area he had to deal with, and has recorded a number of rarities that, upon his own showing, were not obtained in Derbyshire.

For instance, he includes specimens of the Glossy Ibis and Purple Heron which were killed in Staffordshire and Notts, and a Hen Harrier which was shot on the moors near Macclesfield in Cheshire. The Hawfinch is stated to "breed regularly near Sheffield, a few miles from the boundaries of Derbyshire"; and a pair of Smews in the author's possession came from Beeston Rylands in Nottinghamshire. Doubtless the boundaries of a county are more or less artificial, and as it is impossible to set a limit to a bird's flight, it is in some cases highly probable that a species may have sojourned for some time within the county in question, and be subsequently killed beyond the boundary. But to entitle it to a place in the local avifauna, some more direct evidence of its occurrence within the county limits is desirable.

Again, we have evidence here and there that Mr. Whitlock is but imperfectly acquainted with several of the localities of which he writes, some of which even he does not appear to have visited. For example, he refers on page 8 to Lathkill Dale as "treeless," whereas it is well wooded for two or three miles on one side, and for some distance on the other.

But making allowance for such shortcomings, which in a first attempt perhaps are inevitable, we must do Mr. Whitlock the justice to admit that he has brought together in one volume a number of scattered records relating to the birds of his county which will be of interest to Derbyshire folk, and of utility to ornithologists for the purpose of comparison with lists from other counties. It is to be hoped that this book will attract the attention of those who will be able to give him much further information, and so enable him in a future edition to make his record much more complete than it is at present.

Les Coquilles des Eaux Douces et Saumâtres de France. Descriptions des familles, genres et espèces. Par ARNOULD LOCARD, Roy. 8vo. Pp. 327. With 302 figures. Paris: Baillière et Fils. 1893.

IN 'The Zoologist' for 1892 (pp. 447, 448), we noticed a former work by M. Locard on the marine shells of France, published in that year. The present volume, which is uniform in size, type, and style of illustration, deals with the fresh-water and brackish-water species. It is well printed, copiously illustrated, and contains detailed descriptions, not only of all the species usually recognized in French waters, but of a large number of varieties which have been elevated (as it seems to us, unwisely) to the rank of species, and named accordingly. Many of these, we should say, are merely individual variations, and to treat them as if they were so many distinct species, is to create considerable difficulty for the student of conchology. The differences in many cases are so slight, that even after a careful perusal of the descriptions, and a comparison of the figures, it is almost impossible to find sufficiently well-marked characters to warrant distinction.

It would have been preferable, we think, to place these varietal forms upon a different footing, and to treat them as local races, or at most as subspecies, provided always that they present characters which are constant and sufficiently well marked to be appreciable.

We are quite unable to accept the view (as M. Locard would have us do) that there are, for example, 127 species of *Limnæa*,

or 227 species of *Unio* to be found in the rivers and pools of France. Doubtless we have to recognize the fact that these two forms are extremely variable, but once we begin to describe individual differences, we commence a task which may have no ending.

M. Locard's method, it is true, makes us acquainted with a larger number of described forms than are to be found in the works of his predecessors, but this does not mean any great advance in the science.

Moreover, although M. Locard describes the shells very minutely, he ignores the animals inhabiting them. Had he selected a typical species for example in each genus, and given us a description of the mollusc, with some account of its mode of life and reproduction, he would have added considerably to the value of his treatise.

As it is, he has produced a book rather for the shell-collector than for the naturalist, and might have made it even more useful to the former, had he described the sort of situation in which each species is to be found. It is not enough to say of *Physa acuta*, for example, "commun; presque partout, surtout le centre et le Midi." The collector wants to know *whereabouts* to look for it; whether in stagnant water, or running streams; whether buried in the mud from which it must be dredged; crawling amongst the herbage on the bank; or adhering, perhaps, to the under side of the leaves of some *Nymphæa*, *Nuphar*, or other water-plant.

As to the figures in the text, of which there are about 300, they have been carefully drawn, no doubt; but many of them, as *Limnæa* and *Physa* are, as one may say, "un peu trop solide." We miss the delicacy, lightness, and semi-transparency which characterise these shells, and serve to distinguish them at a glance amongst their fellows.

On the whole, then, we are disappointed with M. Locard's book, though we cannot but admire his great power of discernment, and the extraordinary industry which he has displayed in collecting and describing so large a number of shells.

THE ZOOLOGIST

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ON THE OCCURRENCE OF THE BEARDED SEAL (*PHOCA BARBATA*) ON THE NORFOLK COAST.

By THOMAS SOUTHWELL, F.Z.S.

THE vertebrate fauna of the British Isles is so thoroughly worked out that the addition of a new species must of necessity be of rare occurrence, and it cannot even be hoped, so closely have all the residents been studied, that such addition is likely to be made by the subdivision of any recognised indigenous species, as happened with *Arvicola glareolus*; it follows, therefore, that we must look for such increase to exotic stragglers, and even these must be confined to birds and marine mammals. Of the former the county of Norfolk has been exceptionally prolific, and of the latter we can point to at least one species, viz., *Phoca hispida*. It gives me great pleasure, therefore, to record the occurrence of yet another species, which I think I am right in saying has not previously been recognised as British.

On Dec. 10th, 1892, Mr. H. Laver, of Colchester, very kindly informed me that a living Seal was being exhibited in that town, which he could not recognise, and which he suggested, from its hairy muzzle, might be *Phoca barbata*. The description which Mr. Laver gave of the animal was briefly as follows:—Length, five or six feet; sex, male; skin, black with a few hairs only on the shoulders, which were otherwise quite bare; head remarkably narrow and flat, suddenly falling off to a broad nose; fore flippers armed with strong claws, fully two inches long, curved, the third digit the longest; beard long, curved, and very abundant, the individual bristles flat and smooth.

It had when Mr. Laver saw it evidently been captured some time, as it was very gentle and would permit any amount of handling; it seemed very intelligent, and possessed great freedom of motion in its fore limbs. The man who was exhibiting the Seal expressed his intention of visiting Norwich on his way back to Lynn, where he lived, and promised to communicate with me on his arrival here, but did not keep his promise. Mr. Laver sent me one of the bristles of the moustache, and from this and his description I was strongly of opinion that his suggestion as to the species of the Seal was correct, although the bristle differed in length and curvature from those in my possession, which I had obtained from undoubted skins of this species in the Dundee warehouses.

My endeavours to trace the man William Hudson, who exhibited the Seal at Colchester, were for some time unsuccessful, but Dr. Plowright, of Lynn, learned that the animal had died in that town early in February, 1893, and came into the hands of a man named Williamson, who buried it in his garden in a bed which was sown with onions; there could be no question as to the identity of this animal, for in addition to Hudson's statement as to his disposal of it, it was described to Dr. Plowright by its last owner as having "no hair on its back, in consequence of its having been kept in too small a box," and its whiskers were stated to be "six inches long."

At this stage of the proceedings I communicated with Mr. S. F. Harmer, of the University Museum of Zoology, Cambridge, with the result that he agreed to purchase the animal for that Museum, and after the crop of onions had been harvested, the body was exhumed and sent to Cambridge. On the 13th October, 1893, Mr. Harmer sent me the skull for inspection after comparing it with other skulls of the same species, and there is not the least doubt that the animal was a young male of *Phoca barbata*, in evidence of which the mounted skeleton will in due course be placed in the Cambridge Museum.

The tale told by the man Hudson not being in all respects satisfactory, the Rev. S. E. Blomefield, of Burnham Sutton, also Rector of Burnham Overy, was so kind as to make enquiries for me on the spot, and learned from a man named Rudd that he, assisted by three others—Parr, Atkins, and Smith—captured this Seal in a creek in Overy Harbour by driving it into a strong net

in which it became entangled; they then placed it in a donkey-cart and brought it home. Afterwards they put it into a boat with water, and exhibited it in the neighbourhood, amongst others to Mr. Blomefield and his family. The precise date of capture I cannot ascertain, but it was some time before May, 1892. After some months Rudd sold the Seal to a man at Lynn known as "Tater Billy," who proves to be William Hudson.

In his memoir on the Seals in the 'Challenger' Reports (vol. xxvi. part 2, p. 61), Sir William Turner points out that *Phoca barbata* differs externally from the other species of *Phoca*, "in having a broader muzzle, in the middle digit of the manus being the longest instead of the digits slightly decreasing in length from first to fifth, and in possessing four, and not two, mammæ." To this may be added, as stated in my little book on the 'Seals and Whales,' that the mystacial bristles are "simply flattened hairs without the impressed pattern found in the bristles of the known British species," and this I believe to be a good and ready mode of distinguishing this animal. Of course the cranial characters afford the best mode of distinction, but these are not always available.

I wish to record my indebtedness to Mr. Laver, Dr. Plowright, and Rev. S. E. Blomefield, for the very considerable amount of trouble they took in assisting me to trace and identify this interesting capture.

ORNITHOLOGICAL NOTES FROM NORFOLK.

By J. H. GURNEY, F.Z.S.

My last notes ended somewhat abruptly on September 30th, 1892, and missed recording what the following two months, October and November, were remarkable for — viz., a quite unprecedented visit of Lapland Buntings. Dr. Power was the first to notice the northern incursion of this species on Oct. 13th at Cley, where some remained for the winter, but the greatest number were seen on the Caister denes, near Yarmouth. There the arrival of Lapp Buntings was greeted by such hostile reception on the part of birdcatchers, bird-dealers, and others, that I am sorry to say that at least fifty-six were netted and shot. This migration was probably due to a gale from the east on

Oct. 14th. The effect of that gale in Yorkshire may be ascertained by reading Mr. Cordeaux's article (Zool. 1892, p. 417). It resulted in the most remarkable rush of migratory birds ever witnessed by that good observer in his long experience. The veteran Herr Gätke noticed this "rush" also in Heligoland, but no Lapland Buntings were obtained there. I find they do well in confinement, and are fond of oats. They perch like Snow Buntings, but their more terrestrial habits were noticed in a wild state. In July the males in my possession had black throats, which were retained by one of them until October, and a hen bird became pied.

On Oct. 16th two Grey Shrikes were shot, and others seen about this date, being perhaps some of those seen by Mr. Cordeaux at Spurn Point (Zool. 1892, p. 419) after the great gale just mentioned. On the same day a Sabine's Gull was caught at Wells (Feilden, Zool. 1892, p. 423), and my duck-pond was visited by a Shoveller and a Pochard from Saham Mere. A Rough-legged Buzzard was shot at Holkham. 28th.—Black-throated Diver at Cley. 29th.—Hen Harrier and Merlin in Yarmouth Market (Patterson). 31st.—Black Redstart caught at Yarmouth (Smith).

Nov. 2nd.—I received from Mr. Patterson the remains of a Pomatorhine Skua, which he had found on the shore, and a few days afterwards a Puffin was found on the beach at Cromer. 7th.—A Sea Eagle was seen at Northrepps, first on an ash-tree, and then on the wing, mobbed by Rooks; it was shot next day at Runton. 11th.—Mr. Roberts, of Norwich, received from Sir Savile Crossley a singular melanistic Partridge, shot at Campsea Ash, in Suffolk, which was exhibited by him to the Naturalists' Society at its next meeting. It had a black chin and black cheeks, and the rest of the plumage may be described as many shades darker than the ordinary type. In 1891 Sir Savile Crossley's party shot several others similarly coloured. 18th.—A female Scops Owl was obtained near Holt (C. Dack), not so grey as the Cromer one of 1861. Anyone interested in Owls may see in the Norwich Museum a good series of the genus *Scops*, which is now divided and subdivided into sixty-five species (not counting *Heteroscops*, *Gymnoscops*, and *Pseudoscops*), represented in the Museum by 243 specimens. 19th.—Mr. Patterson saw a Shoveller at Yarmouth. 21st.—I received a male Gadwall from Saham Mere, where fifteen others were seen by Mr. Partridge on the following day. A Grey-

headed *Porphyrio* was shot at Stoke Ferry this month, which had most likely escaped from confinement in the North of Ireland (*vide* 'Field,' April 29th, 1893).

From Mr. G. Smith I learn that a young Iceland Gull, which he identified by its measurements, was shot at Yarmouth on Dec. 6th, and to him also I am indebted for the information that a Greater Shearwater was obtained at Caister on the 22nd, and another Iceland Gull at Scratby on the 28th. I have since had the pleasure of inspecting all three. The Shearwater is a very dark bird above, and pure white beneath, without a smoky patch on the belly. The Iceland Gulls are, from their size and measurements, undoubted. One of them is a bird of the year, but the other is older, and is white all over, except a tinge of brown and some brown chequering on the secondaries. There has been a small migration of them this year to the east coast. The Greater Shearwater is an addition to our county list, and the fourth new species which has been recognised since the completion of 'The Birds of Norfolk.' 24th.—A white, or rather very pale, variety of the Dunlin was shot at Wells by Mr. F. D. Wheeler, with which the list of rarities for 1892 concludes.

Before passing on to another year, I may remark that the supposed "Bimaculated Duck" taken in Suffolk in January (Zool. 1892, p. 110), judging from a very good picture of it, was a hybrid between a Pintail and a Wild Duck. It has now passed into the possession of M. Suchetet, who is making a study of all wild hybrids, and was good enough to send the painting for my inspection.

Jan. 1st, 1893.—Five Bewick's Swans were shot at Yarmouth (Smith), and eight others were seen. 2nd.—Thousands of Wood Pigeons appeared at Yarmouth (Smith). 6th.—A Little Gull at Yarmouth (Smith). 9th.—A Scoter, which must have lost itself, was shot at Northrepps, flying over a wood half-a-mile from the sea. 10th.—A Wellingtonia and a Japanese Cyprus were barked by Green Woodpeckers until their stems became quite red, the colour of the under fibre, and the trees were in danger of perishing. 22nd. A Russian Bullfinch (*Pyrrhula major*, Brehm) was shot on Caister denes. Its measurements exceeded those of a common Bullfinch considerably:—thus, length 5·7; expanse of wing 9·7; wing from carpus 3·8 (*cf.* Trans. Norfolk Nat. Soc. p. 421). *P. major* is more easily separable than many so-called subspecies, and it is

probable that this is not its first occurrence in England, though it may have been one of the introduced Bullfinches mentioned by Mr. Tuck (Zool. 1892, p. 145).

There is little to record in February, except that the Sparrows were picking all the yellow crocusses to pieces, and some Waxwings made their appearance, as will be mentioned presently.

Mr. Southwell reported an adult female Goshawk on March 29th at Somerleyton, and later on in the spring a Serin Finch came under his observation. The latter was taken by a bird-catcher named Crompton at Saxmundham, in Suffolk, and was sent to Yarmouth, where Mr. Patterson is confident he saw another. It lived in a cage until July, and was a female bird, very dark in plumage, the result possibly of confinement, and more or less artificial food.

In January, February, and March, there was a considerable incursion of Waxwings in Norfolk, and twenty-five are noted in my diary as having been killed, while several others were seen, the latest on March 6th, at Weston, and March 20th at Warham. The slaughter was not so great as it was twenty-six years ago, and one fine bird which paid me a visit was allowed to pass on unscathed. Whitethorns with haws upon them are the chief attraction to Waxwings.

April 13th.—A Grey Shrike was seen near Holt by Mr. Pashley. 22nd.—A Grey-headed Wagtail at Bradwell (T. Southwell). The Rev. Maurice N. Bird reported, through Mr. Southwell, that two Avocets were seen at Hickling on the 23rd, a pair of Jack Snipes on the 24th, thirteen Spoonbills on the 28th, and a White-winged Black Tern and two Gadwalls on May 5th.

Turning now from rare birds to some of the commoner species, I may note that April was very prolific of Long-tailed Tits' nests, of which there were six at Keswick—two in white-thorn, two in yews, one in a box-tree, and one in a juniper. The old notion that these nests have two holes is not quite exploded, notwithstanding they have only one; and it is very comical to see both head and tail sticking out of the one aperture at the same time. How the young escape suffocation is a mystery.

At Wroxham several Tits—presumably *Parus major*—were reported to be seen feeding on wasps, which were so abnormally abundant in August as to be a perfect plague. It was reported to

our Naturalists' Society, and the members were very glad to hear it, that the Bearded Tits were increasing in numbers in the Broad district, and this was afterwards confirmed by Mr. Bird. Would that the same could be said of the Garganey, which is now very rare, although Mr. Bird saw some on April 10th and August 22nd, and one or two off and on between those dates.

About this date, a curious incident occurred at Northrepps. A hen Kestrel and a small rabbit were taken together at the same time in the same steel-trap, which was placed a foot down the burrow. I mention it partly for the singularity of their capture, but it is the first time I have known a Kestrel pursue a rabbit; and this summer, also for the first time, I saw a rabbit's leg in a Barn Owl's nest. This, however, was a very small one, and the offence was condoned by the presence of numbers of mice remains, five small rats in pellets, a sparrow, and some shrews. I have never identified bats' bones in owls' pellets; but a caged Barn Owl ate a bat as if it was not for the first time. A nest of the Barn Owl in the park, on April 27th, contained seven eggs.

On May 5th the "lumps" left by the receding tide on Breydon water were reported to be black with Turnstones, Whimbrel, Knots, Godwits and Black Terns, and at the same time Black Terns were seen at Morston and Hickling. At the latter place, ten days later, Mr. Bird saw thirteen Black Terns, and on the same day Mr. Pashley wrote word that they were passing Cley in flocks, going west, while scores came up as high as the quay. There was evidently a great passage going on, for three Spoonbills were seen, and according to Mr. Pashley (whose account was afterwards confirmed verbally), "thousands of Knots, in such numbers that the noise made by their wings resembled a passing train." There were great numbers of Scoters also, and the next day (the 16th) two White-winged Terns were seen. The Knots may possibly have come from Spain, on their way northward to their breeding-haunts, for Lord Lilford has remarked that never in his life has he seen feathered fowl in such numbers as the Knots at the mouth of the Guadalquivir in May, 1872. He describes them as being in "countless myriads" ('Birds of Northamptonshire,' p. 287). They would naturally be going northwards at this time of year, and Cley might be another halting-place.

Local naturalists will be glad to hear from the Rev. Maurice

Bird that three broods of Hawfinches flew at Shropham by June 5th, and on that day he saw two Nightingales' nests in the same lime-tree, one six feet, the other ten feet from the ground; and a Blackcap's nest eighteen feet up. There must have been something to account for these extraordinary altitudes,—perhaps the presence of Stoats, which have been unusually abundant, so much so that the keeper at Hempstead had caught the unprecedented number of fifty by July 26th, and others subsequently.

On May 12th Col. Feilden saw an Osprey at Holkham, where a pair of Pink-footed Geese stayed behind, as he observed, until June 8th, long after their companions had left. He last saw them at the end of May, after which he left home; but they are believed to have been seen by the head-keeper as late as June 26th. The abundance of this species during the previous winter had been noticed and commented on (1891—2).

June 20th.—Young Sand Martins were dying in their holes at Keswick from the excessive drought.

July 3rd.—A Little Bittern was unfortunately killed at Rollesby, and on the 4th another, by the same keeper, who thought he was doing a clever thing in shooting them! Mr. Lowne reports that the second, which had been feeding on Perch, “had the appearance on the under parts of having been sitting,” but that they were both males. Lord Lilford has observed, in the case of Common Bitterns which have nested in his aviaries, that the male has occasionally taken part in incubation, so that there would be nothing remarkable in a Little Bittern doing the same.

Mr. Bird reports two Herons' nests at East Somerton.

Mr. Pashley is of opinion that two pairs of Sandwich Terns bred on Blakeney Point, and eggs from one nest, or more, were taken by some boys, with the usual result that they were broken, and therefore the interesting fact is not clearly proved. He writes:—“George Long tells me his boys went to the beach for a few eggs, and they brought back three large eggs of a kind he had never seen before; they were larger than the Common Tern and coloured differently. The boys gave them to a son of Mr. George Hudson.” Long considers that one clutch were hatched, as he saw the old Sandwich Terns flying past his smack at different times with “Sand-launces” (the Lesser Sand-eel) in their beaks, evidently intended for their young. These large Terns were also

seen by Mr. Evershed and other competent observers, and in August a young one was shot, but I think it was old enough to have come from the Farne Islands, where this species regularly breeds. In September about seventeen more were shot, as I am informed, a very uncalled-for and reprehensible slaughter, although they were migrants from further north. If they did breed at Cley as supposed, this is the first time they are known to have done so in Norfolk.

Aug. 13th.—A Crossbill at Burgh (Southwell). 17th.—A Wood Warbler at Cley. 24th.—A Ruddy Sheldrake was shot at Salthouse. It was a female in faded and pale plumage caused by very light edges to all the feathers. There seems to be as much reason for regarding this as a wild bird as the nineteen specimens which were recorded last year (Zool. pp. 392, 427), all my enquiries failing to elicit that anybody had lost one. A Slavonian Grebe and two Wood Sandpipers were shot at Hickling (Bird), and five or six other Wood Sandpipers about this time at or near Yarmouth (Southwell).

Sept. 4th.—A male Icterine Warbler was shot at Wells by Mr. N. H. Joy. It is considerably greyer than the bird figured in Dresser's 'Birds of Europe' (vol. ii. p. 521), but agrees pretty well with a skin from Westphalia:—Wing, from carpus, 3.35; tarsus, .95; culmen, .22; tail, 1.9. These measurements slightly exceed those of the Blakeney bird (*cf.* Trans. Norfolk Nat. Soc. iv. p. 39). This is the sixth British specimen recorded, the last having been obtained in Yorkshire (*cf.* Cordeaux, Zool. 1891, p. 305), and the second which has been met with in Norfolk. 11th.—Two large hawks, believed to be Marsh Harriers, were seen hovering over a dead dog on Gorleston beach by Mr. Southwell. Shore Lark shot at Yarmouth. 12th.—A Little Gull at Yarmouth (Patterson). 14th.—A Lapland Bunting was shot at Cley (Power), and an Osprey was seen at Hickling (Nudd). 15th.—A Wood Sandpiper was seen at Cley by Dr. Power. 21st.—Pink-footed Geese returned to Holkham (Feilden). Shore Larks were seen at Cley (Gunn), and three Lapland Buntings were shot; others were seen at Yarmouth (Smith). 22nd.—A Lapland Bunting was shot at Yarmouth, and three more netted. A great many Twites were seen (Smith). 24th.—Tree Sparrows were noticed on Yarmouth sandhills (Patterson). 25th.—Lapland Bunting at Cley (Gunn). 26th.—Slavonian Grebe at Cley (Gunn).

There is nothing which calls for particular remark in my note-book for October except the occurrence of a Quail at Northrepps on the 20th of that month. It was so fine up to the middle of October that strawberries were gathered out of doors, and migratory birds passed on without halting.

Nov. 9th.—A Guillemot seized a hook baited with a herring, from the Yarmouth pier, and was hauled up alive (Patterson). 10th.—Received a Pomatorhine Skua from Mr. Patterson. 16th.—A Little Auk was picked up on Overstrand beach by Mr. Cole, and about the same time three others were procured at Cley, and one at Yarmouth. Mr. Pashley had a Fork-tailed Petrel, and Mr. Smith another from the Bure Marshes on the 21st; two Glaucous Gulls and three Little Gulls were shot about the 24th, but two of them were lost. These “waifs and strays” were due probably to the tremendous weather which at that date cost many lives and the loss of nearly £100,000 worth of fishing-gear at Yarmouth alone. Undoubtedly the gales were the cause of many buffeted and half-starved Guillemots, Puffins and Razor-bills being washed up dead at Cley, Cromer and Caister, and amongst them on the 23rd a young Black Guillemot which was sent alive to Norwich.

Dec. 4th.—Mr. Lowne received a very large russet-coloured female Snipe from Caister, answering to Gould's *Gallinago russata*, but from the white of the under parts being less extensive than is usually the case, it might be a hybrid between the Common Snipe and *Gallinago major*. He brought it to Norwich, where Mr. Southwell examined it, and I compared it from memory with a very curious Snipe which was shot in 1886 and shortly described at the time (Zool. 1886, p. 392). 9th.—A hybrid, tame-bred, between a Greenfinch and a Mountain Finch, which was exhibited at the Norwich Show, showed no trace of the Brambling in its plumage; another evidence that the parentage of hybrids taken in a wild state is not always to be judged by their colour. This cross must be very rare, as it has not been noticed by Mr. Macpherson in his remarks on “Hybrid Finches” (Trans. Norfolk Nat. Soc. iv. p. 367). Several hybrids between Goldfinch and Bullfinch were also exhibited, as well as a white Redpoll with a crimson forehead, one of the most beautiful varieties I remember to have seen.

NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE,
1892 AND 1893.

BY OLIVER V. APLIN.

Where no other locality is mentioned, these notes refer to the parish of Bloxham.

1892.

Jan. 24th.—After severe weather, with snow and frosts most of the month, the weather became mild about this date. A Chaffinch sang both parts of his song many times, but both parts much curtailed. Afterwards heard from Mr. Fowler that Chaffinches were heard at Swansea the same morning. 30th.—Flock of Ring Doves, a hundred at least, in clover lea at Barford. 31st.—Yellow Bunting and Linnet singing. Received news from Mr. A. W. S. Fisher, Winchester College, that he saw on Jan. 1st, in a small spinney near Godstow, one mile and a half from Oxford, a small hawk, with pointed wings and a long narrow tail, fly out of a tree. It flew over his and his brother's heads and settled on a tree further on. The sun was low and shining full on the hawk's belly as it flew about thirty or forty feet above their heads, and its under plumage appeared to both of them to be black, no bars or markings being visible. He afterwards identified it at the Museum as *Falco vespertinus*. Also had news from Mr. W. M. Foster-Melliar that he had heard of a Peregrine Falcon being shot at Rousham. It was believed to have come after the flocks of Ring Doves at Tackley Heath.

Feb. 3rd.—Examined at Mr. Wyatt's a local pied Blackbird, recently received—a very old glossy black male, with brilliant orange bill, head much and rather evenly mottled with pure white; the only other white about it was on one or two feathers about the under tail-coverts and thighs. I think that, after the head, the thighs are the parts which most commonly show white. 13th.—Put up a covey of Red-legged Partridges, and afterwards watched them for some time in the middle of a ploughed field. They were evidently pairing and were very noisy, calling loudly, "chuck chuck chuckar, chuckar-chuck." Grey Partridges have been paired since the last few days of January. 20th.—Still great numbers of Wood Pigeons on the clover.

March 12th.—Red-legged Partridges paired. Found to-day

the remains of a Missel Thrush and a Wood Pigeon killed and eaten by a hawk on the banks of the Swere; this makes two of the former and three of the latter which I have found there lately.

13th.—Very cold weather again. Saw some boys walk across the ice on a pond. Peewits on the fallows for the first time.

16th.—Mild again. Blackbird singing. 19th.—Saw a Chiffchaff catching gnats in a very sheltered spot. Afterwards had news from Mr. Fowler that he saw one on the 18th on the sheltered side of a wood at Kingham; also that it was reported from Oxford on the 20th. On the 23rd I saw two close together, and on the 26th I noticed four along the parish brook within a dozen yards of one another, while a fifth sang at a little distance; this was the first I heard. In 'The Field' of the 19th, Mr. J. G. Cornish, referring to a note in the previous week's issue of a Thrush singing from the top of the Warden of Keble's House, which used to sing on a pine in front of the Museum, says that Oxford is the only town he knows in which Blackbirds and Thrushes sing from the tops of houses. He attributes it to the fact of the nesting sites being so close to the houses; the habit is not uncommon there. A Thrush, he said, sang at that date from the roof of Hertford College, and Blackbirds not infrequently sang from gable ends of villas in the north of Oxford.

25th.—Examined, at Mr. Wyatt's shop in Banbury, a pair of Long-eared Owls, sent to him from Chipping Norton on the 21st. The male was a very grey bird; the female warm brown, and slightly larger. He said the eggs in the ovary were quite small.

26th.—Saw two male Wheatears, and a pair, in the arable fields north-east of the village. The former were very pure grey, with distinct black head-marks. The buff underneath was only developed on the throat and upper breast, and I think this is generally so in our early, or small, spring birds. I saw a pair on April 24th on a fallow; and on May 10th I observed a very large Wheatear (male, grey on upper parts), doubtless one of the large race of late migrants. It frequently settled, after being disturbed, on the top of a fairly tall hedge, and never on the ground, though the turf was very short. The Wheatear does not breed here, save very exceptionally. At Kingham, in the afternoon (March 26th), Mr. Fowler and I saw, in the Evenlode meadows, a flock of Redwings containing, I should think, quite two or three hundred birds; they were very noisy. One apart in a tall hedge

sang his "trui trui trui," but not very full. A flock of fifty or sixty Meadow Pipits in a meadow (some little parties at Bloxham in the morning); when flushed they, or most of them, settled in trees for a few minutes, which a recent writer says they never do. 27th.—Kingham; another little flock of Meadow Pipits. The migration of this bird must be in full swing.

April 3rd.—Put up a Jack Snipe at my feet from a ditch running into the Sorbrook. 10th.—Redstarts have arrived in some numbers. (On May 1st I noted that they were in greater abundance than ever; [this bird seems to arrive in steadily increasing numbers each year.] Being over the borders, in Warwickshire, below Edgehill, on April 2nd, to see the Parliamentary Steeple Chase, I noticed the Lesser Whitethroat in song—a very early arrival; it appeared here on the 11th. On the 10th saw a pair of Barred Woodpeckers in some big alders on the Sorbrook bank towards Broughton. Tree Creeper in song. 16th.—Saw a White Wagtail in a sheep-fold. Peewit's nest of four hard-set eggs on ploughed field; nest merely a hollow with a few short bits of flattened manure-straw. 18th.—A White Wagtail on the banks of the Cherwell at Bodicote. An old farmer's widow, who formerly lived between here and Woodstock, knows the Wryneck, and enquired of me lately if the "Cuckoo's mate" had arrived, describing its note at the same time. Now at the present day the Wryneck is a rare bird in Oxon, and this is further evidence of its comparative abundance years ago, which I have mentioned before. 24th.—Common Sandpiper on the Sorbrook near Broughton. A little flock of Meadow Pipits; this is late for these passing migrants.

May 3rd.—Saw, at Mr. Bartlett's, a Grey Shrike, apparently adult; it showed a little white on the secondaries and a good patch when the coverts were brushed aside a little; but the rump and upper tail-coverts were wonderfully dark grey. It was sent from Hook Norton on April 11th, a late date for this bird to occur in Oxon. "F. W. L." records seeing four or five Barred Woodpeckers in an elm near Norham Gardens, Oxford, early in the morning of April 2nd. He has seen them in St. Giles in the daytime ('Oxford Times'); I am acquainted with this observer's name. A Bittern was shot in the Windrush in the early part of March, and taken to Mr. Wells, of Burford ('Oxford Journal'). 7th.—Flocks of Fieldfares below Buttermilk Hall, near Barford,

numbering one hundred at least. Mr. F. C. Aplin saw a flock at Bodicote the same day. This is very late for them to be here in numbers. 8th.—Flock of a score or so of Fieldfares near Barford. 11th.—Listened to-night for some time to a Nightingale in the lane leading from this village to Milton. It is now a good many years since one was heard in the parish. Curiously enough, I was only talking about them to the present occupier of Wickham Farm and Mill a few days before; he said they always used to have them at Wickham years ago, and had an idea that the wet summer of 1879 killed them all; but it was before that date that they left off visiting this parish. He rather startled me by saying—

“ ‘A thorn in my nest
Disturbs my rest,’

that is what they say.” He said he had heard this rhyme all his life, since he asked as a child why Nightingales sang at night, and was answered thus. It seems a rather interesting local survival. 12th.—Heard a Whimbrel, which called as it passed over, going N.N.E. at a great height apparently. This was at 9.30 p.m., wind calm, but had been easterly in the day, rather cloudy, and full moon up about half-an-hour. These birds pass over here pretty regularly at migration times, but very rarely alight. 13th.—Under this date Mr. Fowler writes from Oxford:—“This morning I went to Marston Wood, where the number of Nightingales was quite astonishing. I am not surprised to hear of yours. I really think they are increasing. We have one in the Parks.” 16th.—A Bodicote mason, who knew all about the former abundance of the Nightingale at Bodicote about five-and-twenty years ago, told Mr. F. C. Aplin to-day that there was one about a mile from the village, where the latter subsequently heard it. 21st.—Green Woodpecker’s nest about fifteen feet up in the trunk of an elm between here and Milcombe. On account partly of the abundance of timber on that side of the parish, and partly of the numerous ant-hills on Milcombe Gorse, close at hand, these birds are really common here. The Vicar of Milcombe showed me a Goldcrest’s nest in his garden, and told me he had half-a-dozen pairs of Goldfinches about. This is another bird which has increased considerably of late years. I do not consider it at all an uncommon thing to see two or three pairs in a summer’s day now. A day or two after this there were two males in song in a small

apple-orchard at Little Barford. To return to Green Woodpeckers, I may state that on the same day that I found the pair nesting we saw, in the afternoon, one bird, and heard others in the distance; this was while merely walking across the few fields which divide the villages. 25th.—Mr. F. C. Aplin saw, not far from Balscote (at the point where the lane from Shutford cuts into the Stratford road), a pair of birds which could only have been Wood Larks. Described as being smaller than Sky Larks, very short and “dumpy” in shape, and having a remarkably large crest, and the brown plumage distinctly marked on the shoulders and sides of body with narrow whitish marks. They were on a low flat-topped wall bordering a line of plantation.

June 18th.—I went to Kingham, to see the Marsh Warblers which Mr. Fowler has already written upon (Zool. 1892, p. 303), and on this and the following day heard and saw a good deal of them. Sedge Warblers and one Reed Warbler also inhabited the osier-bed, and I may add now that in 1893 (the osiers having been cut in the spring) Mr. Fowler found one or two pairs of Grasshopper Warblers in possession; the osier-bed has therefore held four species of River or Swamp Warblers. 19th.—In Bruern Wood we heard a Nightingale in good song between 12 and 1 p.m. Garden Warblers common and especially noticeable. Observed Wood Wren in the oaks, and others in Churchill Heath Wood. 30th.—Examined a young Hawfinch caught this month before it could fly, in a garden at Neithrop, Banbury. I afterwards saw a young bird in the flesh, shot at the Elms, Banbury, on July 26th, where others, old and young, had been seen.

July 14th.—Mr. Darbey, of Oxford, assured me he had cased up the nest and eggs of a Marsh Warbler, taken from a laurel-bush at Wolvercote this summer. Mr. Darbey knows the nest and eggs of the Reed Warbler well; these eggs had larger and more distinct blotches. I have not yet been able to examine the specimens. 15th.—Observed a female Red-backed Shrike close to their old haunt near the brickyard on the road from Broughton to Banbury; it had just impaled a yellow-banded bumble-bee; indeed the Shrike was in the act when I caught sight of her. 30th.—Saw a pair of Red-backed Shrikes, with young on the wing, in a small close with tall hedges just outside the village. They were still there two days later, and it is curious that the old birds escaped notice before; but, until the hay-grass is cut,

many of our fields afford birds perfect seclusion. These are the first I have seen in this parish during six summers' residence. 31st.—Heard that there were several nests of the Hawfinch in Cornbury Park and the adjoining parts of Wychwood Forest this year. In the house I noticed the following local specimens:—Scaup, 1868; Shoveller, male, Jan., 1871; Pochard; Golden-eye, young male; also a female Harrier with no label, which, as far as I could see (the case being in a bad light), was a Marsh Harrier.

August 2nd.—The Rev. J. Goodwin told me that one evening, a day or two ago, he saw a Nightjar fly out of a tree at the edge of Milcombe Gorse; he knows the bird well in Norfolk. Here the Nightjar is a rather rare bird, but Milcombe Gorse is a suitable locality for it. 12th.—Mr. Goodwin told me of a pair of Barred Woodpeckers which hatched out in a hole in an old Portugal laurel, which they had hewn out when a branch had been blown off and the wood was rotten, in a garden at Swerford this year; the young were seen running about the tree afterwards. Early in July, while fishing in the Swere here, I saw a Barred Woodpecker settle on a dead, barkless willow on the other side the stream, and go into a hole. I crossed over, and as I approached the tree the bird went out; it was either a female or a young bird. The hole was neatly cut out, quite round, and about the width of my two first fingers. As I had never examined the nest of this bird, I could not resist the temptation of cutting it out. I found it went down six or seven inches. At the bottom was some touch-wood and one wing-feather of the bird. I can hardly think breeding had not commenced, and I do not know if this species rears two broods; perhaps the bird I saw was a young one going in for shelter; it was late afternoon and very cold. As usual with Woodpeckers' nests, there was a quantity of chips below the hole. 28th.—Observed a Common Sandpiper on the Cherwell at Bodicote. The Swifts left on the 18th or 19th; they arrived on May 7th, and have been exceptionally abundant this year.

I left England on Sept. 2nd, 1892, and did not return until June 30th following. The notes relating to the period between these dates have been, save when otherwise stated, collected by Mr. F. C. Aplin.

A Manx Shearwater, with a slight pink tint on breast, was shot at Bodicote on Sept. 3rd. A Puffin was caught alive in the canal at Banbury on Oct. 18th.

1893.

March 28th.—The Cuckoo was reported by Mr. W. Wyatt, of Banbury (who ought not to be mistaken), as heard by him on this date. I confess I am not myself an unhesitating believer in March Cuckoos. Swifts arrived on May 3rd, and were numerous the next day. A Nightingale sang for about a fortnight early in May, 1893, in the Bodicote Vicarage gardens; the Vicar believed there were two. One took up its quarters in the Bloxham-gate Spinney, on the Bloxham Grove estate, as the owner informed me. Formerly they were heard there annually, but this is the first which has been heard since 1874. Mr. T. Bennet, of Deddington, tells me that there were again some (as there have been for the last few years) on the south side of that place. Some have been heard also at Milcombe this year, as the Vicar informs me. I have recently examined a Nightingale's egg of the Blue-throat type, which was taken from a nest of four eggs at Islip on May 5th, 1893. I have previously noted the occurrence of this type in Oxfordshire (*vide* Zool. 1892, p. 245). Mr. M. Foster-Melliar saw three Wild Swans (doubtless Whoopers, with which the observer is acquainted) on the flood in a large meadow known as Bestmoor, North Aston, on Jan. 24th, 1893 (*in litt.*). A Dipper was reported to Mr. Fowler as seen on more than one occasion in mid-August, 1893, on the banks of the Cherwell, in the Oxford "Parks"; and he had information from another friend which put the matter beyond doubt. For an account of the Marsh Warbler breeding at Kingham, see Mr. Fowler's note (Zool. 1893, p. 303). I received reliable information that, during the severe frost of 1890-91, a man who had been along the Cherwell with his gun returned with no less than sixteen Kingfishers.

July 8th.—The Rev. J. Goodwin told me he had seen two pairs of Red-backed Shrikes at Milcombe this summer. One night, about the third week in this month, I heard Godwits passing in a south-westerly direction over Bodicote.

Aug. 5th.—Saw a male Red-backed Shrike, much excited, in the same small close in which I saw a pair last year. The bulk of the Swifts departed on the 10th or 11th, and I did not see even a straggler after that date.

Sept. 1st.—Partridges exceptionally abundant, strong on the

wing and wild, and in some cases reported as "packed." 16th.—A good many Meadow Pipits about.

Oct. 1st.—A Chiffchaff in song in the early morning, and a Chaffinch singing, imperfectly. It has been a "Quail year." A nest of eggs was found near Deddington, as Mr. T. Bennet informs me, and I have seen an egg from another taken at Otmoor, near Islip, on May 22nd. Mr. Bennet tells me also of one or two killed early in September at Deddington. Mr. W. Warriner shot one in a cabbage-field at Adderbury on Sept. 30th. and one is recorded in 'The Field' as having been killed in the early part of October by a brother of the recorder, who lived near Banbury. In the same newspaper (Nov. 11th), Mr. W. Kinch records that seven were shot in the parish of Deddington in the second week of September. Swallows and Martins took their departure rather early. I could see none at Kingham or Bloxham on the 9th; and none at Oxford (where they usually stay so late) on the 13th. 21st.—Saw a Turtle Dove; late. 22nd.—Saw a Barred Woodpecker. Received information from a friend, who knows all our common birds well, of a little party of birds seen on a bare barley-stubble, which, from his description of their appearance and note, must have been Twites. I searched the field a day or two afterwards, but could not find them. I have no authentic record of the appearance of the Twite here. 28th.—Saw a Pied Woodpecker between here and Barford; and a small hawk, which I am pretty sure was a Merlin. 29th.—Disturbed a Turtle Dove, drinking at the brook here; as it was not two yards off when it rose, and in its hurry entangled itself for a few seconds in the tall thin hedge on the other bank, I had a good view of it. This is a very late date for it to be here; but it does not seem very unnatural, for honeysuckles, single and double dahlias, heliotrope, geraniums, auriculas, nasturtiums, sunflowers, stocks, canariensis, roses, and other flowers were blooming in the gardens, and a dish of raspberries was gathered the week before in the adjoining parish.

Nov. 7th.—Saw Fieldfares. 18th.—Severe snowstorm from the north, of the "blizzard" order, and very severe frost at night; a man frozen to death near Wardington. More snow next day, but rain and thaw at night. Nevertheless on the following day some of the lanes were impassable, and had to be dug out, and remains of the drifts were to be seen until Dec. 8th in sheltered ditches.

27th.—Received from Mr. Fowler an immature Puffin, which had been picked up a few days before in a swede-field at Stonesfield, and died on the 25th; another was caught in Banbury about the same date.

Dec. 8th.—News from Mr. Fowler of a Great Crested Grebe, apparently immature, shot on the Isis, just below Oxford, and brought to him. 9th.—Large flocks of Fieldfares here now, which are making short work of the abundant and well-ripened crops of haws. 10th.—News from Mr. Sutton A. Davies, Winchester College, of a Snow Bunting, showing a good deal of white, which was shot at Goddington, near the north-eastern boundary of the county, on or about the 5th inst., and sent to him in the flesh. The Snow Bunting is a very rare visitor to Oxfordshire.

The North Newington Sparrow Club destroyed during the past year 2906 birds and 1328 eggs. In four years 10,300 birds and 4700 eggs. There are also Clubs at Shutford, Adderbury, Milton, and Deddington. The damage done by Sparrows to ripening corn and thatched buildings in this neighbourhood of late years has been enormous.

In October some Rooks came to three or four elm-trees on the outskirts of the village and built three nests, but I do not think they laid eggs. No Rooks have been known to breed there before. Some rook-trees between here and Milcombe have been recently cut down, and the birds, now forced to find new quarters, may have belonged to that colony. October was very warm. In 'The Field' of Nov. 11th, a correspondent, writing from Charlbury, stated that about three weeks before two pairs of Rooks began building there, completed their nests, and began sitting. Subsequently he saw one bird feeding the other on the nest. There were no other Rooks' nests there, the nearest rookery being a quarter of a mile off, at Cornbury Park. At Sarsden two or three nests were built, and in one of them young birds were actually hatched and fed until they were well grown; but it is believed they perished in the severe weather which set in on Nov. 18th.

THE MARTEN IN IRELAND.

BY THE EDITOR.

WHEN discussing the question whether there is more than one species of Marten in the British Islands (Zool. 1891, p. 403), we pointed out that the elder Macgillivray, who had good opportunities for examining specimens in Scotland, came to the conclusion that the young animals have yellow throats, and are the "Pine Martens" of authors; while in old individuals the fore part of the neck and breast are white, or greyish white, or pale grey mottled with brownish. The Irish naturalist, William Thompson, of Belfast, arrived at similar conclusions, remarking that all the native specimens which had come under his own notice were yellow-breasted,* with the exception of one, which had the breast white, and was killed in the Co. Antrim. He had, moreover, observed that the yellow colour gave place to white with advancing age, and explained the greater number of yellow-breasted specimens obtained by their comparative immaturity.†

It remains to be proved whether, as is likely, *Martes sylvatica*, Nilsson, is the only species of Marten indigenous to Ireland; but there is no doubt that the animal was at one time comparatively common there, particularly in the north and west, since a lucrative trade in Marten skins was formerly carried on.

Writing on Irish mammals in 1857, the late Sir William Wilde remarked‡:—"The Marten formerly abounded in our woods, and a few still exist in some localities where portions of the ancient forests remain, among which I may specify Ballykyne, near Cong, Co. Mayo, and Kylemore, Connemara, Co. Galway."

To these localities might be added the woods and crags near Loughs Mask and Corrib in Mayo and Galway. Martens were also formerly common on the borders of Clare and Galway, where they were preserved in the woods on the estate of Raheen

* This remark has been confirmed by other observers, *e. g.*, see Eyton, Ann. Nat. Hist. 1840, p. 290. In 1870 Mr. Glennon, the taxidermist of Dublin, received for preservation no less than thirteen Martens from different parts of Ireland, not one of which had a white breast (Zool. 1870, p. 2282). See also 'The Field,' March 18th, 1874.

† In museum specimens the yellow colour of the throat fades so much as to become at length hardly perceptible.

‡ Proc. Roy. Irish Acad, vol. vii. p. 194.

Tomgraney, Co. Clare, by the English proprietor, who, about 1860, had purchased the property in the Encumbered Estates Court.

In former times the Marten was much sought after for the sake of its fur, as we have already had occasion to remark (Zool. 1891, p. 404), and this no doubt has contributed to its gradual extinction in parts of the country where it was once common.

In the 16th century it appears that Marten skins formed an important article of commerce in Ulster. Peter Lombard, who died in 1625, mentions the wild animals, including the Wolf and Wild Boar, which were common at that period in Ulster, and adds "*præcipue Martes quorum pelles plurimum æstimantur.*"*

In Charles the First's time Lord Deputy Strafford, in a letter to Archbishop Laud, dated Dublin, 27th November, 1638, wrote:—

"Before Christmas your lordship shall have all the Marten skins I could get either for love or money since my coming forth of England, yet not to the number I intended. The truth is that as the woods decay, so do the Hawks and Martens of this kingdom. But in some woods I have, my purpose is by all means to set up a breed of Martens; a good one of these is as much worth as a good wether, yet neither eats so much or costs so much attendance; but then the Pheasants must look well to themselves, for they tell me these vermin [*i. e.* Martens] will hunt and kill them notably. Perchance you think now I learn nothing going up yonder amongst them into the forests and rocks."†

At one time, in all probability the Marten must have been generally distributed throughout Ireland, but as civilisation has extended inland from the east and south, and as woods have been cut down, and the country opened up by railways, drainage, and cultivation, so has this animal been gradually driven into the wilder portions of the north and west.

The following statistics, gleaned from a variety of sources, will convey some idea of its past and present distribution.

ULSTER.

Co. DONEGAL.—Mr. R. Patterson, of Belfast, writes that about 1880 one was caught in a rabbit-trap at Horn Head, and another at the Ards; in 1884, two near Ballyshannon; and "some years ago," two near Glenties; others seen at Glen Veigh, and Lough

* 'De regno Hiberniæ Insula Sanctorum.'

† Strafford's 'Letters and Despatches' (1638), vol. ii. p. 249.

Esk. In September, 1883, a Marten was killed not far from the town of Donegal. Mr. Chichester Hart saw one at Glenalla in 1879, and thought that the species was then certainly decreasing (Zool. 1880, p. 18). He added that it is invariably known as *Madaidh crainn*, i. e., tree-dog, and not *Cat crainn* (a name he never heard). Mr. R. Patterson writes that, about twenty-five years ago, a pair made their home in the thatch of an outhouse near Coxtown.

Co. LONDONDERRY.—Castle Dawson and Toome Bridge are localities in this county mentioned by Thompson as former haunts of the Marten prior to 1852, and in all probability, when writing this note, Thompson had in view the specimen in the Belfast Museum labelled "Toome Bridge," which, however, is in Antrim.

Co. ANTRIM.—In the Belfast Museum there is a specimen labelled "Toome Bridge, Co. Antrim," May, 1851. Another was killed at Glenarm in 1866. In 1871 a third was taken at Shane's Castle, and in June, 1887, a fourth, a male, was obtained at Cookstown. Other localities in Antrim mentioned by Thompson are Glenariff; Shanes Castle Park; vicinity of Larne; Tullamore Lodge; Castle Dobbs; and Malone House, within four miles of Belfast. At the last-mentioned place a pair of Martens were discovered, he says, in possession of a Magpie's nest. Similar cases occurred in Belvoir Park, and Tollymore Park, Co. Down.* Mr. R. Patterson reports one seen at Benvariden, and one (perhaps the same) caught at Portglenone, in March, 1893; another caught at Templepatrick, in May, 1893; and, in the same year, one at Glenarm.

Co. TYRONE.—In 1870 one was caught at Moy.

Co. FERMANAGH.—In this county, according to Thompson (Nat. Hist. Ireland, vol. iv. p. 9), the Marten has been met with at Florence Court. This was prior to 1852.

Co. MONAGHAN.—No records.

Co. ARMAGH.—Prior to 1852 Thompson noted that the Marten had been met with in Lord Gosford's demesne, as well as at Tandragee, and at Churchill, where it has been again met with.

Co. DOWN.—Amongst former haunts of the Marten in this county, noted by Thompson prior to 1852, may be mentioned

* The Marten has been known also to take possession of a Rook's nest cf. 'The Field,' April 4th, 1874).

Hillsborough Park; Tollymore Park; Donard Lodge; and Belvoir Park, where a Marten inflicted a severe bite on the hand of a boy who unexpectedly found it in the nest of a Magpie. Examples have been trapped in the demesnes of Lord Roden and Lord Annesley, at Castlewellan, and two were taken some years ago at Ballynahinch, Monteith (Mr. Kerr). These were both dark brown with yellow throats. In 1882 a Marten was trapped at Castle Ward, near Downpatrick; and in January, 1886, another (a male) was killed at Warren Point. In 1884 Martens were seen between Bangor and Donaghadee.

Mr. Sheals, taxidermist, of Belfast, reported that in April, 1891, a large male Marten was trapped by Major Maxwell's keeper at Finnebrogue, Downpatrick (Zool. 1891, p. 304); and Mr. Robert Patterson reported that in October of the same year another was killed by Lord Roden's keeper, at Bryansford, near Newcastle. This was a male, which measured 28 inches from tip of nose to end of tail, and weighed $3\frac{1}{2}$ lbs. Amidst the wild and broken ground of the Mourne Mountains in this county, the Marten will probably for some time yet to come defy the efforts of its would-be exterminators.

Co. CAVAN.—No records.

LEINSTER.

Co. LONGFORD.—Prior to 1852 a Marten was taken at Carrickfergus.

Co. MEATH.—No records.

Co. LOUTH.—No records.

Co. WESTMEATH.—No records.

Co. KILDARE.—No records.

Co. DUBLIN.—Dr. John Rutt, in his 'Natural History of the County of Dublin,' 2 vols. 8vo, 1772, states that "the Martern, or Marteron, *vulgo* Marten, is found at Lutterel's town, that it destroys rabbits and poultry, and is almost as mischievous as a fox" (vol. i. p. 281).

Co. WICKLOW.—Mr. H. Chichester Hart reported that a Marten was killed at Luggielaw in 1865, and another at Avondale in 1872 (Zool. 1880, p. 18). The latter, which had been trapped and had a broken leg, was sent by Mr. Hart to the Dublin Zoological Society, but died on the journey. The occurrence of the Marten in Wicklow has been noted also on the

authority of Mr. A. B. Brooke, of Colebrook, Co. Fermanagh. One killed by him in this county in March, 1870, measured 28 in. from tip of nose to end of tail, and weighed 2 lbs. 12 oz. (Zool. 1870, p. 2282); this proved to be a doe with three young.

KING'S COUNTY.—No records.

QUEEN'S COUNTY.—No records.

Co. CARLOW.—No records.

Co. KILKENNY.—Sir R. Payne Gallwey, in his 'Fowler in Ireland' (p. 326), mentions the woods of Desart in this county as a former haunt of the Marten.

Co. WEXFORD.—In 1876, as reported by Mr. R. Patterson, at least four were killed at Stokestown; and in 1881, a female Marten and two young ones were taken at Oaklands. Mr. C. B. Moffat, writing to 'The Irish Sportsman' on June 4th, 1892, stated that the survival of the Marten in this county had been conclusively proved by his friend Mr. Arthur Rutledge, of Coolbawn Cottage, near Killanne, Enniscorthy, who, on the first of May, he says, "was fortunate enough to take in one of his traps a handsome specimen, which he immediately forwarded to the Zoological Gardens in Dublin. Mr. Rutledge informed me that this capture was quite accidental, there having been no suspicion of such a creature's presence until it was found a prisoner in a trap that had been set for rabbits. I consider that this fact much enhances the interest of the capture, suggesting as it does with what ease so wary and wild an animal may exist (even in the vicinity of poultry-yards, sheep-folds, and game-preserves) without attracting attention to its presence, unless by such a mishap as has befallen Mr. Rutledge's victim. That relations of the captive Marten still haunt the woods about Coolbawn and other places at no great distance cannot be doubtful."

To this communication the editor of 'The Irish Sportsman' appended the following note:—

"There are several districts not far from the boundaries of the County Wexford where the Marten still exists in some numbers, and we believe that the animal in question was rather a straggler to the Co. Wexford from one of these more favoured localities than a resident in the county. It is said that the Marten is an animal which is very readily trapped, and that if it exists in a locality where rabbit-traps are used, it is certain to be

caught; indeed, we have read that the use of rabbit-traps is the principal, if not the sole cause of the extermination of the Marten in some parts of Great Britain."

MUNSTER.

Co. CLARE.—On the estate of Raheen Tomgraney, in this county, about 1860, Martens were considered fairly common, and were protected by the English proprietor, who had purchased the property in the Encumbered Estates Court.

Mr. J. F. Darling, writing from Clonakilty, Co. Cork, in 1883, forwarded the measurements of one that had been captured in the Co. Clare in that year, and which weighed 2 lbs. 5 oz.* (Zool. 1883, p. 252). It measured, from tip of nose to end of tail, 29 in.; length of head, $4\frac{3}{8}$ in.; tail, 12 in.; ditto to end of caudal vertebræ, $8\frac{1}{4}$ in.; fore limb, from head of humerus to end of claws, $6\frac{1}{2}$ in.; hind limb, similarly measured, $8\frac{7}{8}$ in.

Co. TIPPERARY.—In the woods about Clonmel (Thompson).

Co. LIMERICK.—No records.

Co. KERRY.—In the neighbourhood of Killarney, more especially near Lough Carragh, still fairly numerous. In 1856 no less than ten were trapped on the Lansdowne estate. In April, 1877, Lord Kenmare's keeper at Killarney spoke of trapping Martens there as no uncommon thing, and mentioned 7s. 6d. as the usual price he got for the skins (Zool. 1877, p. 292). In 1882 they were reported to be still fairly numerous about Lough Carragh. In 'Land and Water' of July 30th, 1892, a correspondent, signing himself "Cloonee," wrote:—"At a shooting I rented some years ago, in the wilds of Co. Kerry, Martens were very common in the dense rocky mountain woods, and we used to trap numbers of them, but I never saw one in a tree, although my dogs have put up plenty in the close covert. I found the best plan of trapping them was to tether a young live rabbit to about 18 inches of string fastened to a peg, and place four strong steel traps around it, lightly buried under the grass, and secured by chains to other pegs, being careful not to touch the traps with the naked hand. The result was that we frequently secured one

* Mr. H. A. Macpherson, in his 'Fauna of Lakeland' (p. 24), states that the average weight of a male Marten is from 4 to 5 lbs. One caught at Glenarm, Co. Antrim, in 1885, weighed 5 lbs.

or more Martens ; but as their habitat was in a wild place, a long way from our lodge, we did not often set the traps. I wrote the other day to the agent of the property to enquire if he could procure me some young ones alive ; but he replied that they have no keepers there now, and no trapping appliances, so I should say that Martens in that country are as plentiful, if not more numerous, than they were at the time to which I allude—some fifteen years ago.”

Co. CORK.—According to Dr. R. Ball, the Marten has been met with near Youghal, and Dr. Harvey, in his ‘Fauna of Cork,’ mentions Barry’s Court, Dunmanaway, and the woods near Bandon, as localities in which it has also occurred.

Co. WATERFORD.—About 1850, according to Mr. Ussher, three blind newly-born Martens were taken in the roof of a summer-house at Cappagh, and the mother was subsequently caught. Another was taken the same year at Colligan, and a pair occupied the thatch of a summer-house at Meadborough.

CONNAUGHT.

Co. MAYO.—Mr. W. C. Horsfall, writing from Tourmakeady, Ballinrobe, Co. Mayo, in April, 1874, stated that in his woods, about twelve miles from Castlebar, he had known several instances of the occurrence of the Marten (‘The Field,’ April 11th, 1874) ; and Mr. W. Garnett, in 1882, reported its occurrence at Castlebar. Sir Wm. Wilde, as above noted (p. 100), has testified to its former abundance about Ballykyne, near Cong.

Co. SLIGO.—There is a specimen in the Belfast Museum which was received from Hazlewood, in this county, in 1845 ; and several have been killed near Sligo, two in 1887 (one in May, the other in August), and another in Nov., 1888. Col. Whyte also has furnished independent testimony as to the occurrence of the Marten in this county. On June 10th, 1876, he published the following remarks in ‘The Field’ :—“I often see lamentations over the destruction of wild animals, and the Marten Cat mentioned as one that is almost extinct. About a fortnight since, the keeper on a distant mountain reported to me that he had found the feathers of several Grouse, destroyed by vermin. I gave him half-a-dozen traps, and desired him to bring me the animals or their skins. I received to-day (June 5th) the eleventh Marten Cat, some of them being of immense size. Now, as this

mountain was severely trapped last season, and these animals have strayed from certain woods belonging to my neighbours, it does not appear to me that there is much fear of the animal becoming extinct; and if any of the gentlemen who lament the probability would like to procure a few specimens to turn into their own coverts, I shall be happy to put them in the way of doing so." But this was written eighteen years ago. We have seen a specimen preserved in the collection of Mr. Borrer, of Cowfold, Horsham, which was sent to him by Col. Cooper, of Markree Castle, Sligo.

Co. LEITRIM.—The occurrence of the Marten in this county has been noted on the authority of the late Col. J. Whyte, of Sligo (*cf.* 'The Field,' June 10th, 1876). In the Belfast Museum, where several specimens of the Marten are preserved, is one which was procured in this county in 1881. Martens used often to be seen at Glenfarne.

Co. ROSCOMMON.—No records.

Co. GALWAY.—At Kylemore, Connemara, according to Sir Wm. Wilde (*Proc. Roy. Irish Acad.* vol. viii. p. 194), the Marten was formerly abundant, as it was also around Lough Corrib, and at Ballynahinch.

Of late years its chief enemies have been game-preservers and their keepers, who seldom or never lose an opportunity of trapping or shooting it. Nevertheless it is gratifying to know that, notwithstanding this persecution, there are still many wild districts in Ireland where Martens may hold their own for many years to come.

For any additions to this list of Irish localities for the Marten the Editor will be grateful. It is remarkable that in the first two series of 'The Zoologist' (1843—1876) not a single note is to be found on the subject of the Marten in Ireland.

In a future number it is proposed to give some information respecting the life-history, food, and habits of this animal, and to notice some interesting facts concerning it of which no mention has been made in the standard work on British Quadrupeds.

NOTES AND QUERIES.

An Egg of the Great Auk. — There was considerable excitement amongst ornithologists and oologists in London on Feb. 22nd, when an egg of the Great Auk, *Alca impennis*, was offered for sale by auction at the well-known sale-rooms of Mr. Stevens in King Street, Covent Garden. This egg, which formerly belonged to Yarrell, was purchased by him with other eggs for a trifling sum at Boulogne, about 1838, and while in his possession was figured by Hewitson in his standard work on British Birds-eggs. After Yarrell's death, in 1856, it was sold for £21 at Stevens's Sale-rooms, and through the intervention of a dealer, became the property of the late Frederick Bond, in whose beautiful collection of eggs it remained for something like twenty years, until upon the sale of his collection, in 1875, it passed into the possession of Baron Louis d'Hamonville, who bought the entire collection, and by whom it has now been once more offered for sale. An egg with so good a pedigree, and so well known to English collectors, many of whom must have seen it while in Bond's collection, was not likely to exchange hands for a trifle. Mr. Stevens, after reminding those present at the sale that the last egg of the Great Auk sold by him in 1888 realized £225, opened the biddings at one hundred pounds. £110 was quickly offered, and the biddings, mounting up by ten guineas at a time, eventually reached the exorbitant sum of three hundred guineas (£315), at which price it was declared to have been purchased by Sir Vauncey Crewe, Bart., of Calke Abbey, Derbyshire, whose name will be familiar to many readers of this Journal.

MAMMALIA.

Habits of the Otter.—Referring to the Editor's interesting article on this animal in 'The Zoologist' for February, 1894, I would point out that the "nests" constructed by the Otters amongst the reed-beds are really *not* "peculiar to the district referred to." When observing birds in certain marshes in West Jutland last May (1893), I came across "lairs" or "nests" of Otters, formed in reed- or cane-brakes, precisely similar to those described by Mr. Southwell and referred to by the Editor (p. 43). These nests did, in fact, much resemble those of Coots, except that they were much larger, and, if my memory serves me correctly, I believe I saw similar "Otter nests" in the Outer Hebrides, on certain islets in the lochs, some eleven years ago.—ALFRED C. CHAPMAN (Moor House, Leamside, Durham).

Food of the Otter.—*Apropos* of the statements (pp. 7, 53) that the Otter's food consists not only of "fish, flesh, and fowl," but also of mollusca and crustacea, the following quotation, from Messrs. Harvie Brown and

Buckley's 'Vertebrate Fauna of Argyll and the Inner Hebrides' (p. 17), is very much to the point:—"On the island of Soay, amongst many inhabited holes of the Storm Petrel, a most interesting Otter's resting-place was discovered, and with a spade was laid open for inspection from end to end. After cutting away the earthy peat and close turf of an almost cheese-like consistency throughout the whole length of the tunnel, laying back carefully each square or parallelogram of sod, we measured the length, and found it just fifteen feet. The tunnel was in average size throughout about one foot in diameter, except just at the far end, where it decreased to about four inches. Here and there it was widened out into most evident circular or oval chambers, and the sides and roof were smooth and glossy, rubbed and polished by the passage to and fro of the animal's fur. The habitation had a cunning and gradual incline upwards into the peat bank from the entrance. The latter was simply an uneven, rough, grassy-edged and semi-concealed doorway in the face of the peat slope. The passage led into and out of these larger chambers over little ridges or elevations across the floor of the passage. Though the walls of peat were damp, smooth, and glossy, and even slimy to the touch throughout both passages and chambers, yet water could not lie in the hole, unless just at the aforesaid ridges, which intersected the entrances of the tunnel below each chamber. Near the entrance of the hole, and about two to three feet from it, was evidently the family 'kitchen-midden' of the Otters, consisting of a very considerable heap of the domestic 'rejectamenta,' not less than five or six inches in height and nine inches in width. This occupied a side chamber made to one side of the tunnel. Harvie Brown gathered up a handful of this material, which on examination was found to consist of fragments of *shells of mollusca*, and upon a more minute examination afterwards, remains of fish, *lobster-shells*, and the hair of some small mammal were identified. It is much to be regretted that we did not have a photograph of the place taken on the spot, laid open as it thus was to the light of day, and the internal economy of the Otters' home displayed."

Food of the Badger.—On Jan. 18th we caught a Badger in a trap with a Wood Pigeon in its mouth. I know that a Badger will take young birds and rabbits, but I did not imagine that it could capture so wary a bird as a full-grown Wood Pigeon.—(Sir) JOHN DILLON (Bart.), (Lismullen, Navan, Co. Meath).

Unusual abundance of the Bank Vole in 1893.—The remarks by Mr. Oldfield Thomas in 'The Zoologist' for February (p. 54), on the unusual abundance of the Bank Vole during the past year, have been to some extent confirmed by my own experience in trapping near Macclesfield. I commenced trapping about four months ago, October to February, and during this period I found *Mus sylvaticus* decidedly the commonest species. Next in order of frequency I found *Microtus glareolus* and (some way below

in point of numbers) *M. agrestis*, of which I got very few. I have never caught anything but *Mus sylvaticus* in cold or stormy weather, which tends to show that this species is the hardiest. Since the commencement of the New Year, however, I have hardly had any Bank Voles in the traps, not more than two or three, while *Mus sylvaticus* is as plentiful as before. Possibly the few nights we had of severe frost may have killed off the less hardy Voles. I have also secured several Shrews, three specimens of *Sorex vulgaris*, and one of *S. pygmaeus*.—NEWMAN NEAVE (Rainon, near Macclesfield).

BIRDS.

The Birds of Derbyshire.—*A propos* of the criticism of Mr. Whitlock's book, 'The Birds of Derbyshire,' which appeared in the last number (p. 78], and of the reviewer's remark that he had not found any reference to the most important collection in that county, that of Sir Vauncey Crewe, at Calke Abbey, the author writes to us as follows:—"With regard to the Calke Abbey collection I can only say that the noble owner, for reasons, which were no doubt quite competent, did not find it convenient to allow me an opportunity for inspection. But while I regret the absence of Sir Vauncey Crewe's notes, I did not feel called upon to indefinitely postpone its publication on this account alone. Moreover, it is inaccurate to state that no mention is made of the Calke Abbey collection. As an instance, I may quote the case of the Whiskered Tern, perhaps the most interesting of all the accidental visitors to Derbyshire, particulars of which are given on page 218." After referring in some detail to other points in the review with which he is dissatisfied, and which we cannot find room to discuss, he concludes with the remark that if, as the reviewer suggests, there are some who may be able to give additional information relating to the avifauna of the county, he will be very glad to receive their notes or criticism.

Ornithological Notes from West Surrey.—I send the following notes from my diary for 1893, in case they may prove of interest:—On January 3rd Mr. S. A. Davies saw a Bittern, *Botaurus stellaris*, in the water-meadows at Hurtmore, Godalming. In this month a Pochard, *Fuligula ferina*, appeared on the River Wey below Godalming, and remained several days. Mallard and Teal were fairly plentiful throughout the frost in the water-meadows. In February a small flock of Lesser Redpolls, *Acanthis rufescens*, appeared in the alders below Godalming, and three were taken by a local bird-catcher. In March large numbers of Ducks appeared in the water-meadows between Godalming and Shalford. On March 31st Mr. S. A. Davies saw a Buzzard of some species on a common near Elstead, and on April 3rd I went with him to the place and saw a pair of these birds. On April 10th I observed a pair of Geese in a meadow near Catteshall; they turned out to be Canada Geese which had escaped from

confinement; one was afterwards shot. On April 11th Mr. Davies saw a pair of Green Sandpipers, *Totanus ochropus*, on migration near Elstead. Nothing of special interest occurred during the summer months, but during the first week in August we again saw several Green Sandpipers with Common Sandpipers on migration; the latter were very common on our river all this month. On Sept. 11th I went with Mr. Davies to a large pond in the neighbourhood of Farnham, where, to my great surprise, I saw a solitary Golden Plover, *Charadrius pluvialis*, among some Peewits, an unusually early date for this species. We also saw a Greenshank, *Totanus canescens*, feeding on the shores of the lake; this bird was very wary, but with the aid of a glass we were able to identify it perfectly. On the 16th we saw an unusually large "charm" of Goldfinches, quite forty or fifty birds. On Sept. 20th I heard a Lesser Spotted Woodpecker, *Picus minor*. On Oct. 9th the first winter Snipe arrived, and on the 17th the first Teal; both these species breed in the neighbourhood, and we have found the nests within the last few years; they do not appear in the river valley in the summer months. On the 17th the first Fieldfares arrived. On the 31st a Kestrel, *Falco tinnunculus*, was found in a bedroom of our house. On Nov. 5th I was surprised to see a Snipe sitting on a boundary stone; also a Willow Wren or Chiffchaff, I am not sure which, as it was getting dusk at the time. On the 6th the first Redwings arrived. On the 15th the first Siskins, *Chrysomitris spinus*, arrived; five were taken by a bird-catcher, and the others have been with us ever since in considerable numbers, feeding on the catkins of the alders; they may be seen clinging to the twigs in every conceivable position, like Tits, and keeping up a low but incessant twittering,—with them are a few Lesser Redpolls; and Goldfinches, which seem very plentiful this autumn, consort with both species. On Dec. 17th I saw five Snipe sitting on a rail, and on the 18th Mr. Davies and I saw two Snipe perched on the top of an alder, quite 30 feet from the ground.—R. S. ROBERTSON (Godalming).

Hybrid Sparrows.—The Rev. J. G. Tuck has recently forwarded for my inspection a Sparrow which was shot with a number of others on Jan. 13th, in a farm-yard near Bury St. Edmunds, and which he considered to be a hybrid between *Passer domesticus* and *Passer montanus*. In this opinion it is pretty evident he is right. The bird has the plumage of the Tree Sparrow, but with only a faint indication of the black cheek-patch, and has the crown almost grey, like that of the House Sparrow, while the beak in size and form is intermediate between the two. Considering that the Tree Sparrow is locally common, and the House Sparrow generally abundant, such hybrids as this might be expected to occur frequently in a state of nature. Possibly they do; but if so, they are rarely detected. Several instances have been reported of the two species pairing in captivity. One such case occurred in an aviary at the Zoological Society's Gardens in

1880, though the eggs were not hatched. Another and more successful instance was noted at Norwich, where a young hybrid was reared and is now preserved in the collection of Mr. J. H. Gurney. But I have not hitherto met with more than one reported case of such a hybrid occurring in a wild state. This one is mentioned by Mr. A. Suchetet, in his very useful papers on Wild Hybrid Birds (part iii. p. 275) published in the 'Memoires de la Société Zoologique de France' (vol. v. 1892). It was obtained in France by the late M. Lemetteil, of Bolbec, Seine Inférieure, in December, 1868. The additional instance now brought forward by Mr. Tuck is, therefore, of some interest. On a comparison of his specimen with that in the possession of Mr. Gurney, it was found to be greyer on the crown, to have less black upon the throat, and to have the black cheek-patch not nearly so well defined. Mr. Tuck having kindly entrusted it to my care for a few days, I took the opportunity of exhibiting it at a meeting of the Linnean Society held on the 15th February last, when it naturally attracted much attention from the ornithologists who were present.—J. E. HARTING.

Woodcocks Breeding in the Lake District.—A short time ago I learnt incidentally that for several years past Woodcocks had bred regularly in that part of the Lake District lying between Coniston and Skelwith,—that is, in the thickets of Grisedale, Tilberthwaite, and Eller Water. Being anxious to ascertain the truth of the report, I visited the locality, and was fortunate in interviewing an intelligent man now employed as foreman and book-keeper at the Tilberthwaite slate-quarry. He had formerly been a gamekeeper in the employment of the Duke of Buccleuch, and (for a gamekeeper) had a loving knowledge of the habits of birds. He assured me that for some years back—"about seven or eight"—Woodcocks had remained in that neighbourhood, and had reared their young in the copses. He had seen many nests, and had watched the life-progress of the young ones. The whole of the land and the woods in this district (or nearly so) are the property of Mr. Marshall, and it is sincerely to be hoped that efforts will be made to protect the many birds at present to be found there. On the occasion of my visit I noted by the way-side, and in the woods and in the air, twenty-two different kinds of birds. The day (Feb. 5th) was a phenomenally genial one, and I heard Song Thrushes, Robins, and Chaffinches singing gaily.—G. W. MURDOCH (Kendal).

Grey Phalarope in Staffordshire.—An adult female of this species, changing to winter plumage, was shot on Oct. 4th last, at Willenhall, Staffordshire, by Mr. Taylor. It was found upon a small stream, and was alone. This is, I think, the first on record for Staffordshire.—F. COBURN (Holloway Head, Birmingham). [No; see Garner's List, p. 285.—ED.]

Swimming Powers of the Dipper.—If any additional evidence to that given in the 'Zoologist' is needed, I may state that last August, when

shooting near Towyn, Wales, I saw a Dipper, *Cinclus aquaticus*, enter the water from the opposite bank of a wide, but still stream. It swam steadily and easily, in a slanting direction up the stream to the other side, swam low in the water, and looked very much like a Water Vole crossing a stream.—F. COBURN (Holloway Head, Birmingham).

Wildfowl in Merionethshire.—Following the great gale of November last, between the 16th to 20th of that month, several birds appeared at Penrhyndeudraeth, Merionethshire, which, though common enough on the east coast of England, seldom visit North Wales. On the 18th, during the height of the gale, I shot an immature Long-tailed Duck, *Harelda glacialis*, as it was diving close under the rocks in the estuary there. On the 22nd I saw a Slavonian Grebe with fully developed ruff—a late date for this bird to retain the summer plumage. Early on the morning of the 27th I noticed a pair of Bewick's Swans on the north beach; they did not remain long, however, but passed inland, disappearing over the hills to the N.E. On the evening of the same day, while waiting for Ducks at flight time, I killed a Grey Phalarope, *Phalaropus fulicarius*, at the edge of a pool on the saltings near the village of Talsarnan. Lastly, on Dec. 4th, I shot a Snow Bunting, *Plectrophanus nivalis*, from a flock which was feeding in company with Linnets on the mud banks in Pensarn estuary.—G. H. CATON HAIGH (Aber-Ia, Penrhyndeudraeth, Merionethshire, N.W.).

Nesting of the Great Crested Grebe in the North of Ireland.—In March last year, being in Ireland, I went on the 29th of that month—a beautifully fine day—to a village about three miles from the one in which I was then staying, to have a look at a large artificial lake which I had heard of as being the resort of some Great Crested Grebes, *Podiceps cristatus*. On approaching the lake we could see their white breasts glistening in the sunshine. There were nine of these birds on the lake. We walked round to get a nearer inspection of them, and on our way we flushed three Snipe, also a flock of nine Teal and some Wild Ducks. While looking at the Grebes we saw two of them lower their heads suddenly and swim rapidly towards one another, and when they met (their heads being parallel to the water till they did so) they crossed their beaks and raised themselves slightly from the water; they then swam away again. This strange performance I am told they go through before they commence to make their nests. A friend mentioned to me in a letter that on this lake, later in the summer, he saw a Great Crested Grebe swimming about, followed by some young ones, and he had no doubt that more than one pair had nested there. The lake is in the north of Ireland, but I do not want to give the name of the situation, for who can tell what molestation these fine birds may experience if any "collector" should chance to go that way.—G. B. HORSBRUGH (4, Richmond Hill, Bath).

Hybrid Finches at the Crystal Palace Bird Show.—At the recent Bird Show at the Crystal Palace there were not quite so many hybrid finches as usual. Only a dozen specimens were exhibited, the most interesting being crosses between the Bullfinch and Redpoll, the Siskin and Goldfinch, and a bird numbered 1559, but undescribed in the catalogue, which, in my opinion, was a Linnet and Goldfinch hybrid. The specimen awarded first prize was entered as "Linnet and Bullfinch," although this was apparently a mistake, for the bird appeared to be a cross between the Bullfinch and Goldfinch, of which some other fine examples were, as usual, on view. The entries in the classes reserved for Canary mules numbered 138, including crosses with the Goldfinch, Linnet, Siskin, Bullfinch, Redpoll, and Greenfinch. Of the other birds, in the British classes, the most interesting were some Kingfishers, a Tree Creeper, a Redstart, and two fine Cornish Choughs.—A. HOLTE MACPHERSON (51, Gloucester Place, Hyde Park).

Pink-footed Goose in Dumfriesshire.—In former days the Bean Goose was the most common grey goose on the Solway Firth. Of late years it has, in my experience, been replaced to some extent by *Anser brachyrhynchus*. I lately identified the remains of a Pink-footed Goose, which had been shot out of a flock on the Scottish side of the estuary, between Annan and Gretna.—H. A. MACPHERSON (Carlisle).

Short-eared Owls in Northumberland.—Mr. R. Service's description of the extraordinary destruction of young Short-eared Owls by Foxes (Zool. p. 57) must, I think, have caused no little amazement amongst your ornithological readers. During the whole of the spring, summer, and autumn of 1893 we had these Owls constantly on the grouse moors adjoining Cheviot and Hedgehope, in Northumberland. When shooting at Ilderton last week (Jan. 31) I still noticed them hunting about as usual, but I had not heard that any special mortality exists here amongst them. Though without actual proof, I have little doubt that these birds bred on the Northumberland moors during the spring of 1893.—ALFRED C. CHAPMAN (Moor House, Leamside, Durham).

Snow Buntings in Co. Kildare.—During the winters of 1891-92 and 1892-93 a great number of Snow Buntings (*Plectrophanus nivalis*) visited the Curragh of Kildare. During the winter of 1891-92 I was in England from Oct. 15th to Dec. 30th; previous to the first of these dates no Snow Buntings had arrived; after my return to the Curragh I first noticed them on Jan. 7th, 1892, from which date I frequently saw them until Feb. 25th, after which day I saw no more. During the winter of 1892-93 I was away from the Curragh from Oct. 1st to Dec. 14th, and had not seen a Snow Bunting before I left; but on Dec. 15th I saw a large flock of about thirty birds, and continued to come across them almost daily until March 10th, which was the last day I saw any. This winter the flocks were larger than the last, and there were certainly more of these birds about. Although I

was constantly out over the country all round the Curragh, yet I never came across any Snow Buntings except on the open downs of the Curragh itself. I should very much like to know about what date Snow Buntings may be expected to arrive at the Curragh.—ARTHUR W. HASTED.

Great Spotted Woodpecker in North Wales.—A bird which I think, from the description given me, was most likely *Picus major*, was seen by a friend of mine in the garden at Tyn-y-Coed, Arthog, N. Wales, during the first week in November last.—ARTHUR W. HASTED.

Pied Flycatcher and Grey Wagtail in North Wales.—I saw a pair of the former, on May 5th last, at Arthog, N. Wales, and am told that *Muscicapa atricapilla* is frequently met with in that part of the country. On the same day I had the pleasure of watching a pair of Grey Wagtails, *Motacilla boarula*, for some time.—ARTHUR W. HASTED.

Waders on the Solway Firth.—It is a curious fact that the Solway Firth is visited almost every year by certain species which are excessively rare on the west coast of Scotland. The Spotted Redshank, *Totanus fuscus*, and the Little Stint, *Tringa minuta*, are species in point. A few Little Stints visit us every year, and we meet with them both on the Scottish and English sides of the Solway Firth. Since we have searched for the Spotted Redshank, it has been met with in immature plumage nearly every autumn, almost always in the same part of the Solway. The Grey Plover, *Squatarola helvetica*, is seldom seen on the west coast of Scotland. The numbers that visit the Solway Firth vary very much, especially in the spring of the year, when assuming the black breasts before their departure. One was brought to me lately which had been stuffed by a farm servant; he did not think the black feathers of the breast sufficiently deep in colour, so had tried to improve upon Nature by staining them with ink, which has left a purplish stain upon the plumage. We can rarely get a black-breasted Grey Plover; the bulk of the old birds that winter on the Solway Firth delay their arrival with us until after they have assumed full winter livery. I have seen birds killed in nuptial plumage in September, and Mr. Seebohm thought they must be spring-killed birds. The birds in nuptial livery that visit us in autumn are always very wild and difficult to approach; unlike the Golden Plover, which always seem to me to be tamest when in full livery.—H. A. MACPHERSON (Carlisle).

Little Gull on the Solway Firth.—Although the Little Gull, *Larus minutus*, wanders to the Solway Firth at not infrequent intervals, I never met with it on the Scottish side of our estuary until the present winter. In January last an immature bird of this species was shot on the Solway between Annan and Dumfries. It is in very similar plumage to a specimen which was obtained on the English side of the water on the 25th of October last.—H. A. MACPHERSON (Carlisle).

Garganey at Rainworth, Notts.—Though I have already mentioned in 'The Field' that a pair of these ducks were seen on the lake here in April last year, I should like to note in 'The Zoologist' that they were seen on April 9th and 10th. This was the first time they had ever been observed on any of the ponds about here, although we have looked for them for years, and their occurrence therefore is of some interest.—J. WHITAKER (Rainworth, Notts).

Mobbing by Crows.—Most naturalists will remember Bates's account of being mobbed by Curl-crested Toucans, *Pteroglossus Beauharnaisii*, on the Amazons. Birds less gregarious will sometimes do this; of course it is easy, by holding up a young bird, to bring down the parents within a few feet from among a crowd of Gulls and Terns on their breeding-grounds; but the Crow is, as a rule, not abundant or bold enough in this country to assemble for the purpose of mobbing anyone. In Denmark, however, in the fine beech and fir woods that stretch for about 20 miles north of Copenhagen, from Charlottenlund to Hornbaek, the Hooded Crow, *Corvus cornix*, is very abundant, and exceedingly impudent and tame, being but little molested there. I was once fairly driven away and routed by them. I had ascended a tree in order to inspect a nest of young Crows, which were so well fledged, however, that, on my head appearing over the edge of the nest, they all fluttered out, two falling to the ground near the foot of the tree. I accordingly descended, and, after a little trouble, caught one of them and proceeded to examine it. At first it kept quite quiet, until I tried to open its beak to examine the colour of the palate. This, however, seemed more than it could stand, and it called out so noisily, and so startled me with its suddenness and violence, that I almost let it drop to the ground. At once the other young ones began screaming also, and in a few seconds the parents appeared, settling overhead, and adding to the din. Presently two others came hurrying up, then more and more, until there must have been upwards of two dozen, and the noise—to use an expressive Scotchism—was fairly "deaving." The fury of the birds was remarkable; they were simply convulsed with rage, and could hardly remain quiet on the branches. The noise became so unendurable that I was forced to beat a speedy and ignominious retreat. In this case, of course, the cry of the young bird was the exciting cause; but these Crows do not always require that incentive, for once coming suddenly to the edge of a small swampy savannah in the forest, I surprised a flock of thirty or forty feeding; these at once rose on the wing, but, instead of flying away, began to wheel about and follow me along the edge of the wood, each vying with its neighbour in abusive outcry. This only lasted for a minute or so, for—like a flash—a little male Hobby, whose mate was sitting on eggs close at hand, appeared amongst them, and, with a few lightning-like "stoops" right and left, dispersed the entire flock. They seemed frightened at the Hobby, though they torment

and mob the Buzzard unmercifully. In England and Scotland I have brought the mother Crow, *C. corone*, within a few yards by holding up a partly-fledged young one; but the male bird usually keeps well out of gunshot, and none other than the Crows immediately interested show any concern.—HAROLD RAE BURN (Halifax).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 1st, 1894.—Prof. STEWART, President, in the chair.

Sir Hugh Low and Mr. F. C. Smith were admitted Fellows. Dr. Johann-Mueller and Mr. K. Mitsukuri were recommended by the Council for election as Foreign Members.

The President exhibited a remarkable specimen of a South-African butterfly, *Teracolus halyattes*, from Natal, in which the wings on one side were those of a male and on the other those of a female, and made some remarks on hermaphroditism in the Lepidoptera.

On behalf of Mr. William Borrer, of Cowfold, Sussex, there was exhibited a skull of the Pine Marten, *Martes sylvatica*, Nilsson, from a specimen killed near Crawley (Zool. 1891, p. 458), an examination of which confirmed the view of the late E. R. Alston (Proc. Zool. Soc. 1879, p. 469), that, so far as could be ascertained, this is the only species of Marten found in the British Islands.

On behalf of Mr. W. B. Tegetmeier, there was exhibited a drawing of a Snow Leopard, taken for the first time from life—namely, from the animal now living in the Zoological Society's Gardens, Regent's Park. The long, thick, and soft fur, suggestive of a cold habitat, and the unusual size of the wide-spreading feet, well suited for travelling over an expanse of yielding snow, were noteworthy features.

Mr. Malcolm Laurie read a paper on the Morphology of the *Pedipalpi*. He considered the first two ventral sclerites to the abdomen to be appendages, and not sternites. The first of these—the genital operculum—covers the ventral surface of two segments, the genital aperture, and the first pair of lung-books lying beneath it. The first pair of lung-books, he thought, probably represent the remains of the appendage of the second segment. The arrangement of this region resembles that in *Eurypteridæ* and in the spiders (e. g. *Liphistius*), while differing markedly from that in Scorpions. The posterior end of the intestine is dilated into a large stercoral pouch which is part of the mid-gut, the malpighian tubes arising from its posterior end. The cephalothoracic portion of the mid-gut differs in

structure from the abdominal portion, and, in addition to lateral diverticula, has two median ventral diverticula. The coxal gland opens at the base of the third pair of appendages, and a sensory organ of unknown function occurs on each side of the last segment. An interesting discussion followed, in which Mr. R. J. Pocock, Mr. H. M. Bernard, and the President took part, and Mr. Laurie replied.

A paper was then communicated by Mr. W. West, "On the Fresh-water Algæ of the West Indies," in which several new species were described and beautifully illustrated. Mr. G. Murray, in criticising this paper, testified to the extreme care and accuracy with which the species had been worked out.

Feb. 15th.—Prof. STEWART, President, in the chair.

Mr. Linnæus Greening was elected, and Mr. Albert Smith was admitted a Fellow of the Society.

Mr. W. B. Hemsley exhibited some germinating seeds of *Lemna* and some flowering plants of *Lemna gibba*, upon which, in his absence, some remarks were made by Mr. C. H. Wright. From the observations made, it was inferred that although *Lemna minor* and *L. gibba* are usually regarded as distinct, they are respectively the male and female plant of one species.

On behalf of the Director of the Royal Gardens, Kew, Mr. C. H. Wright exhibited and made some remarks upon a collection of native plants from the neighbourhood of Cape Town, which had been presented to the Herbarium by Miss Yorke, and which was remarkable for the skilful way in which the natural colours of the plants had been preserved.

On behalf of the Rev. J. G. Tuck, of Tostock Rectory, Bury St. Edmunds, there was exhibited a hybrid between the Common House Sparrow and the Tree Sparrow, *Passer montanus*, which had been taken near Bury on the Jan. 13th last. Only one instance of a similar wild hybrid was said to have been previously captured, although two or three instances were on record of the two species interbreeding in aviaries.

Mr. J. C. Willis gave an abstract of a paper on the Natural History of the Flower (Part II.), in which he dealt with the mode of fertilization in *Brodiaea ixioides*, S. Watson; *Stanhopea tigrina*, Bateman; *Pimelea decussata*, R. Br., var. *diosmæfolia*, *Cotyledon umbilicus*, L.; *Hydrolæa spinosa*, L.; *Ziziphora capitata*, and made some remarks on cleistogamy in *Salvia verbenaca*, L. A discussion followed, in which Dr. D. H. Scott, Prof. Reynolds Green, and Mr. A. B. Rendle took part.

The Secretary read a paper, by Miss D. F. Pertz, "On Hygroscopic movements connected with seed-dispersal," in which the author partially reviewed the literature of the subject, and detailed the method of observation adopted by previous workers and by herself.

ZOOLOGICAL SOCIETY OF LONDON.

February 6th, 1894. — Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of January, 1894.

Mr. Sclater exhibited a fine specimen of the River-hog of Madagascar, from the Tring Museum, lent for exhibition by the Hon. W. Rothschild, and pointed out that three distinct species of this well-marked genus of *Suidæ* were now known to occur in the Ethiopian Region. A communication from Mr. Last gave an account of the habits of this animal, as observed in Madagascar.

Mr. Sclater also exhibited a stuffed specimen of the White-billed Great Northern Diver, *Colymbus adamsi*, from Norway, which had been lent to him by Prof. R. Collett, and made remarks on the distribution of the species, and on its interest as occasionally occurring on the British coast.

Prof. Howes read a paper on synostosis and curvature of the spine in fishes, with especial reference to the Common Sole.

Mr. F. E. Beddard gave an account of the development of the tadpole of an African Frog, *Xenopus laevis*, as observed in specimens of this Batrachian hatched and reared in the Society's Gardens.

Mr. Chas. W. Andrews gave an account of some remains of the extinct gigantic bird (*Æpyornis*) which had been recently received at the British Museum from several localities in Madagascar. These were referred to three species—*Æ. muelleri*, *Æ. medius*, and *Æ. titan*, the last being of larger size than even *Æ. maximus*. Another set of remains showed differences which might eventually prove to be of generic importance, and were perhaps referable to the newly-established genus *Muellerornis*.

Mr. M. Barkley read some notes on the Antelopes of the Pungue Valley, East Africa, as observed by him during a recent hunting expedition in that district.

The Marquis of Hamilton made some observations on the Antelopes met with by him during a recent excursion from the Pungue along the coast northwards towards the Zambesi.

Mr. O. Thomas read the description of a new species of Bat of the genus *Stenoderma* from Montserrat, West Indies, proposed to be called *S. montserratense*. This bat was stated to be very injurious to the cacao-plantations in that island.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

February 7th, 1894.—HENRY JOHN ELWES, Esq., F.L.S., President, in the chair.

The President announced that he had nominated the Rt. Hon. Lord Walsingham, LL.D., F.R.S.; Professor Edward B. Poulton, M.A., F.R.S.,

and Colonel Charles Swinhoe, M.A., F.L.S., Vice-Presidents of the Society for the session 1894-95.

Mr. Walter F. Baker, of 18, Hyde Terrace, Leeds; Mr. Percy M. Bright, of Roccabruna, Bournemouth; Professor Lewis Compton Miall, F.R.S., of the Yorkshire College, Leeds; and Mr. Edwin Wilson, of Cherry Hinton Road, Cambridge, were elected Fellows of the Society.

Mr. Jenner Weir exhibited, on behalf of Mr. J. M. Adye, a specimen of *Plusia moneta*, Fabr., which had been captured at Christchurch, Hants, and remarked that this species, which had been found in this country for the first time so recently as June, 1890, was apparently becoming a permanent resident here, as it had been since taken in several of the southern counties. The food-plant, *Aconitum napellus*, though rare in England as a wild plant, was very common in gardens. Mr. Jenner Weir also exhibited a nearly black specimen of *Venilia macularia*, L., the yellow markings being reduced to a few small dots.

Mr. Hamilton Druce exhibited a female specimen of *Hypochrysops scintillans*, lately received by him from Mioko, New Ireland. He said that only the male of this species had been as yet described.

Mr. F. Enock exhibited a nest of the British Trap-door Spider, *Atypus piceus*, recently found near Hastings by Mrs. Enock.

Mr. W. F. H. Blandford stated that he had recently obtained an additional species of *Scolyto-platypus* from Japan, which, though closely allied to the species he had formerly described, showed a very distinct modification of the male prosternum.

Mr. M. Jacoby exhibited and remarked on a specimen of *Leptispa pygmæa*, Baly, which was doing much injury to sugar-cane in the Bombay Presidency of India. Mr. G. C. Champion stated that he had found an allied species on bamboo.

Dr. F. A. Dixey read a paper—which was illustrated by the oxyhydrogen lantern—"On the Phylogeny of the *Pierinæ* as illustrated by their wing-markings and geographical distribution." A long discussion ensued, in which the President, Mr. Osbert Salvin, Mr. Jacoby, Colonel Swinhoe, Mr. Jenner Weir, Mr. Hampson, and Mr. Kenrick took part.

Dr. T. A. Chapman read a paper entitled "Some notes on those species of Micro-Lepidoptera, allied to *Micropteryx*, whose larvæ are external feeders, and chiefly on the early stages of *Eriocephala calthella*." Mr. Hampson and the President made some remarks on the subject of the paper.

Mr. Hamilton H. Druce read a paper entitled "Description of the female of *Hypochrysops scintillans*, Butler."

The Rev. Dr. Walker communicated a paper by Mr. R. H. F. Rippon, entitled "Description of a variety of *Ornithoptera (Priamoptera) urvilliana*."—H. GOSS & W. W. FOWLER, *Hon. Secretaries*.

THE ZOOLOGIST

No. 208.—April, 1894.

BIRD LIFE IN ARCTIC NORWAY.*

BY JOHN CORDEAUX.

ORNITHOLOGISTS will be grateful to Professor Collett, of Christiania, and his translator, Mr. Alfred Heneage Cocks, for a useful and pleasantly-written pamphlet on 'Bird Life in Arctic Norway,' the observations recorded being the results of wanderings within the Arctic circle made by the author during seven summers.

In these days Norway annually attracts hundreds of tourists, sportsmen, and naturalists of all nationalities. Year after year the stream of those who set their faces northward increases, and we need not be surprised at this when we consider the marvellous attractions of a part of Europe the scenery of which surpasses anything that can be found within the same easy distance of our shores. In a few hours, and with little exertion, we find ourselves transported as if by magic from the conventionalities of civilization and the cares of business, into a primitive world of the grandest and most diversified features—a land of surpassing beauty, with snow-clad mountains and shining glaciers, deep fjords and sounds, matchless waterfalls, exquisite transparent lakes in deeply sheltered valleys, belted with an almost southern vegetation; above these dense pine forests, and, higher still, mountain wastes of immense extent with a sparse vegetation, beyond the birch-zone, of lichens and dwarf shrubs and grey

* 'Bird Life in Arctic Norway'; a popular brochure, by Robert Collett, Professor of Zoology in the University of Christiania; translated by Alfred Heneage Cocks, M.A., F.Z.S. R. H. Porter, London.

willow, studded with lakes and bogs where the migrants from the south come to nest and hatch out their young. In this notice, however, we have to deal solely with that part of Norway within the Arctic circle. Some knowledge of the birds which resort thither, and of the exquisite beauty of the fauna and flora, cannot fail largely to enhance the interest and pleasure of the traveller, and it is particularly on these grounds that this little work should be in the hands of all who intend to visit the land of the midnight sun.

Prof. Collett divides Norway into three natural zones:—

- I. The coast district and island belt up to the North Cape.
- II. The deep fjords of the Arctic Ocean, and river basins in East Finmark.
- III. The interior plateaux.

The further north we travel on the Norwegian coast we find that, although the species decrease, the number of individual birds increase, and nowhere perhaps is bird life more richly displayed than on the furthest shores of Europe facing the Arctic Ocean, in—

“A land that is lonelier than ruin,
A sea that is stranger than death.”

One of the most remarkable of the many bird-rocks is the Sværholtlubb, a little to the east of North Cape; it is perhaps the largest and most densely populated station in the world, and is almost exclusively occupied by the Kittiwake. Here are concentrated millions of birds on cliff-walls about 900 feet in height. Prof. Collett calculates that for every breeding pair (with entirely white head) there are eight to ten young individuals, distinguished by the black ring on the nape, which are not breeding. This enormous colony of Kittiwakes appear to subsist chiefly on small crustaceans, enormous masses of which are moved to and fro by the currents and form the food of Rudolph's Whale and the gigantic Sibbald's Whale.

It is remarkable that several pelagic species found in the more open parts of the Atlantic and the Faroes do not nest anywhere along the Norwegian coast-line, such as the Storm and Fork-tailed Petrels, the Gannet, and the Manx and Greater Shearwater and Fulmar; these, although occurring more or less off the coast, do not breed.

On scattered lands within the mystic circle of the Arctic Seas

nest incredible numbers of some species, as the Spitsbergen and Brünnich's Guillemots, Little Auk, the Glaucous, Iceland, and Ivory Gulls, and others which never breed so far south as Norway. The Razorbill does not breed beyond the northern part of Norway, and it is probable that its large and extinct relative the Great Auk never occurred, except accidentally, north of the Arctic circle. It was on Hornö, near Vardo, the most easterly bird-rock of Finmark, that in 1848 a reputed Great Auk was shot by Herr L. Brodtkorb (Mitth. Orn. Ver. Wien. 1884). Professor Collett still gives credence to this story, but Professor Newton, in his latest contribution to the history of this species ('Dictionary of Birds,' art. Gare-fowl, p. 305), declines to accept it, the whole matter, in his opinion, having been thoroughly sifted by Wolley forty years ago.

An interesting question is raised by the author as to where all these enormous hosts of high Arctic birds pass the winter, some of them only occurring sparingly off the Norwegian coast, and the Spitsbergen Guillemot, *Uria mandti*, being unknown on any European coast.

The young of the Razorbill, ushered into the world on a bare wind-swept ledge exposed to every storm, to sleet, snow, and rain, is almost entirely naked, but the young Puffin, born in a deep and sheltered hole, is a living ball of down, the apparent unfitness of this arrangement is one of those points in the economy of nature difficult to understand; for it does not appear, in this case at least, that the wind is tempered to the shorn lamb. Illustrations of the young of these, also of the Kittiwake, are given.

On the belt of islands which fringe the coast the most characteristic birds are Oystercatchers, Ringed Plovers, Turnstones, and various Gulls and Terns. On the larger islands, or egg-holms, nest great numbers of Eiders, the Grey-lag Goose, the Great Black-backed Gull, and Arctic Skua. On an island in Lofoten have bred for years a pair of Bernacle Geese, a bird which nests nowhere else in Europe, nor does the Brent Goose, but in the spring immense numbers of the latter come on a fixed day in May to the Naze, and more follow; then in rows as straight as a line they sweep northward along the whole coast till they fetch the outermost north-westerly Skerries, and from thence "northward" is still the cry to Spitsbergen, Nova Zembla, and further still into the infinite unknown beyond.

There is no better station than Tromsö for observing Arctic bird-life. Everywhere may be heard the harsh chatter of Field-fares, nesting in colonies, but never more than one nest on each tree, with generally a pair or two of Redwings in each colony. Many of the characteristic birds of the north are to be seen, as *Motacilla viridis*, Arctic Bluethroat, Red-throated Pipit, Brambling, Mealy Redpoll, *Phylloscopus borealis*, and Sedge Warbler (*Acrocephalus phragmitis*), besides numerous waders and ducks.

Many of our more common birds reach Tromsö, and their highest northern range is about lat. 70° N., where they sing and nest in the dense birch-woods and willow-scrub which clothe the luxuriant basins which debouch on the sides of the Arctic fjords; such are the Song Thrush, Garden Warbler, Blackcap, Redstart, the two Flycatchers, Tree and Meadow Pipit, Ring Ouzel, Wheatear, White Wagtail, Hedgesparrow, Willow Wren, and Cuckoo, with others. The Chiffchaff hardly goes further than just beyond the Arctic circle. To these valley bottoms also come innumerable Martins (*Chelidon urbica*), breeding in colonies, several hundred pairs together, on the precipitous mountain walls, under shelves and small projections of the rock, attaching their nests just as they do on the cliffs at Flamborough. The Sand Martin also goes as far north as it can find nesting-places, and will drive its horizontal tunnels into the peat-roofs of houses, exactly as we have seen their holes driven into the perpendicular sides of the deep peat drains cut on Thorne waste in Yorkshire. Space will not allow of following Prof. Collett in his charming pictures of the nesting haunts of such well-known Arctic birds as the Snow Bunting, Shore Lark, and Lapland Bunting, the former of these feeding its young especially on the large crane-fly (*Tipula*).

The author thinks the song of the small birds is not quite the same, some of the strains being different and unknown in the south, and this variation he attributes to the immensity of the areas, and to the habitable spots being so few and far between, so that each male sings only to its mate, and competition can never arise, each song being independent of the influence of others. Those who are interested in this subject cannot do better than consult the Encyclopædia Britannica, art. Birds, "song."

But of all the bird-voices in these desolate wastes, none is so conspicuous as the call of the male Willow Grouse, which exactly resembles that of the Red Grouse of Britain, from

which it differs in no other respects than in the possession of permanent white remiges and the assumption of a white garb in winter. The Ptarmigan of Scandinavia is identical with our Scotch bird; its place is taken in Greenland and Iceland by a closely-allied form, the Rock Ptarmigan (*Lagopus rupestris*). The Spitsbergen Ptarmigan (*L. hemileucurus*) is now supposed to be a Willow Grouse, in which case it is suggestive of a former much greater extension northward of the continent of Europe. Perhaps the most interesting to ornithologists amongst the smaller birds frequenting the birch-woods is the Siberian Willow Wren (*Phylloscopus borealis*), a species which the author says was unknown west of Archangel before 1876. This little bird has a monotonous note of only one syllable, "zi-zi-zi," quickly repeated, with occasional short pauses of half-a-minute. The nest, which is domed, but without feathers or hair, is placed at the root of a tree in the densest part of the forest, and well concealed by wild flowers. There is a nest with the young sitting side by side on a branch in the Museum at Christiania, the only young of this species hitherto exhibited. The bird has occurred in Heligoland, and probably once on our east coast at Flamborough on Nov. 21st, 1893,* just after the great gale from the north and north-east. Its winter home is in China and India, and in the Archipelago, and as it does not appear to have been recognised on migration in the southern parts of Norway, it probably follows the eastern route across Russia.

The Willow Warbler (*P. trochilus*) breeds as far north as the Cape, and its nest is lined with a handful of the white winter-feathers of the Willow Grouse.

On desolate holms along the coast, and within the Arctic fjords, breed many species of *Tringa*, and on the driest spots, where grows a brown carpet of *Empetrum nigrum*, the Arctic or Richardson's Skua. Sometimes the two parents differ in one having a white and the other a black belly, or both may be black or white-bellied. In the down, the young are all black, but later become variegated like the parents. Some islands are entirely occupied by the Arctic Terns. Buffon's Skua inhabits the

* Since I have had an opportunity of inspecting Mr. Dresser's skins of the *Phylloscopi*, I am convinced that a Leaf-warbler watched by me at this date was *Phylloscopus borealis*. (See 'The Naturalist,' 1894, p. 40.)

mountain plateaux, and shows no variation in plumage. The Pomatorhine or (as Prof. Collett would call it) the Broad-tailed Skua nests nowhere in Europe but in the Eastern Siberian tundras. In the high stony uplands the reindeer-moss grows most luxuriantly, the district is studded with innumerable lakes and extensive morasses, covered with dwarf birch and willow scrub. These are the breeding quarters of various species of ducks. Some Whoopers, the Lesser White-fronted Goose, no bigger than a Mallard, and the Bean Goose (*Anser segetum*), two skins of which, lately added to the Copenhagen Museum, were obtained in 1891 by the Danish Expedition in Eastern Greenland in latitude 65° N.

In the more stony tracts, amongst silver-grey lichen, saxifrages, and other dwarf plants, nests the Dotterel (*Eudromias morinellus*), here completely alpine in its habits, and rarely nesting below the highest tree-line. Here, too, is found *Lanius excubitor*, a species subject to variation in the wing-markings, but which Prof. Collett has clearly shown must be considered one and the same, and breeding indiscriminately amongst themselves.

In great Lemming years, when these little rodents increase beyond all calculation, the uplands swarm with large predacious birds, especially Rough-legged Buzzards, Short-eared Owls, Snowy Owls, and from the richness and abundance of their prey, these, too, become unusually and abundantly prolific, the Snowy Owl having as many as ten eggs in a nest. It will be remembered that exactly the same tendency to unusual fecundity has often been recorded before, and especially was observed in connection with the Short-eared Owls during the recent plague of Field Voles in Southern Scotland (see 'Zoologist,' 1893, p. 131).

Of late years the Arctic avi-fauna has shown a decided tendency to take up ground to the west. The Shore Lark—which in the last thirty years has become so common a migrant across Heligoland, and more recently on the east coast of England—is a case in point, so also probably the Siberian Willow Wren. There are, however, species found in Northern Russia which, so far, have not occurred in Finmark; such are the Rustic and the Little Buntings, *Motacilla citreola*, *Anthus gustavi*, and the Terek Sandpiper (*Terekia cinerea*), Bewick's Swan, the Smew, and the larger White-fronted Goose, the former two being north-easterly forms, have not been found nesting in Norway.

The lovely Steller's Eider does not breed nearer than the Murram coast, the north-west corner of Russia between Norway and the White Sea, but it occurs in large numbers in the Varanger Fjord in winter. We can recollect the time when this very rare wanderer to the British coasts, then better known as Steller's Western Duck, was, in our imagination, scarcely second in value and rarity to the Red-breasted Goose, and even the Great Auk itself. Now, thanks to Arctic exploration, we know much more of its haunts and habits. An idea of the immense number to be found east of the Taimyr peninsula and in Bering's Straits may be gathered from the observation of Mr. E. W. Nelson, the naturalist who accompanied the United States Revenue Cutter 'Corwin' in 1881, and also from more recent narratives of exploration in those high northern latitudes. In the cruise of the 'Corwin,' Steller's Eider is said to be excessively common on the north coast of Siberia and about Cape Wankarem in August, in company with an equal number of King Eiders and a few Pacific Eiders. The narrative states that "soon after the expedition came to anchor off the native village the body of birds arose from the estuary a mile or two beyond, and came streaming out in a flock which appeared endless; it was fully three to four miles in length, and considering the species which made up this gathering of birds, was enough to make an enthusiastic ornithologist wild with a desire to possess some of the beautiful specimens which were filing by within gunshot of the vessel."

It is interesting to know what are the small European birds which succeed in braving the winter in the birch-woods of Tromsö; these are *Parus borealis*, the Lesser-spotted and the Three-toed Woodpeckers, some Yellowhammers, Tree Sparrows, Bullfinches, Mealy Redpolls, and Golden-crested Wrens, a solitary Tree Creeper, and rarely the Long-tailed Titmouse; and amongst the larger birds the Siberian Jay, one of the most amusing and entertaining birds in the northern forests. The Common Sparrow has succeeded in reaching Ox fjord, just south of Hammerfest, but it is to be hoped will find the winter too cold to stay in those high latitudes; this has been the case in Greenland, where, from the latest accounts, the Sparrow seems, from the damp and cold climate, unable to hold its own.

Some resident northern birds, as the Magpie, Lesser Spotted Woodpecker, and the Northern Marsh Tit, and some others, show

very considerable climatic variation from southern forms in the direction of having more white in the plumage, but it is by no means clear that these changes are due to Protective Selection. In the Willow Grouse and Mealy Redpolls this divergence from the original type is much more marked and established.

In concluding this notice of Professor Collett's interesting pamphlet, it is to be observed that much of the most important and scientific part of the original has been omitted by the translator. At the same time the English edition contains not only much original matter—the result of personal observation—but also, in an Appendix (added at the suggestion of Mr. Selater), a most useful list of the birds which breed in Norway, and of the non-breeding feathered visitors.

NOTES ON THE SEAL AND WHALE FISHERY OF 1893.

BY THOMAS SOUTHWELL, F.Z.S.

THE uncertainty of all connected with the Seal and Whale Fishery was never more manifest than in the season of 1893, which has been the worst known for many years for the vessels leaving the Newfoundland ports, the produce being little more than one-third that of the two preceding years.

In order to understand the reason of this failure, it is necessary to state that on the east coast of Newfoundland there are believed to be always two more patches of breeding Harp Seals; one is known as the Southern and the other as the Northern Patch, these two nurseries being situated at a distance from each other of a hundred miles, sometimes much more, sometimes rather less. The young seals on the Southern Patch are, I am informed, born in the last days of February, or the first days of March, those on the more northern ice between the 10th and the 15th of March. The former, too, are larger than the latter, their pelts, with fat attached, weighing from 50 to 60 lbs., whereas those found on the northern patch do not exceed from 40 to 45 lbs. at the same age.

Owing to the great destruction of old seals in the season of 1892, the steamers were not allowed to leave port till two days

later than usual, namely on the 12th of March,* and killing was prohibited before the 14th; no second trip was allowed, and the season closed on the 20th April. It happened in 1893 that the seals were very far south and farther than usual from the shore, and the 'Esquimaux' was the only vessel which cleared from St. Johns, eleven leaving Greenspond, 150 miles further north, six others sailing from Seldom-come-by, further north still in Fogo Island, and one even so far to the north as St. Anthony; it thus happened that all the vessels practically missed the southern pack, being to the north of them, and when they should have fallen in with the northern pack, owing to the gales of wind from the W.N.W., the ice had been so driven off the shore and broken up by the sea that it was impossible for the men to approach the scattered seals on foot over the loose ice, which, on the other hand, was not sufficiently open to admit of their pulling to them in boats. The sea, too, which amongst the pack-ice is quite smooth, amongst these loose streams was very rough, and in addition the crews suffered greatly from frost. Had all the vessels cleared from St. Johns, as was formerly the case, and started on their voyage two days earlier, it seems highly improbable that the breeding seals would have been missed. The same adverse conditions of the ice which so prejudicially affected the pursuit of the Harp Seals rendered the fishery for the Hooded Seals equally unproductive, and the three vessels which fished to the west of Newfoundland in the Gulf of St. Lawrence did not average better than those to the east.

The twenty-two steamers engaged in the Newfoundland fishery make a return of 129,060 seals, old and young, all the vessels participating to a greater or less extent, the largest number, 12,770, being secured by the 'Eagle,' the 'Nimrod' following with 12,182, but these were the only two vessels whose catch ran into five figures, the average of the whole being 5866, which number was exceeded by eleven of the vessels, whereas the remaining eleven were below it. This compares very badly with

* Sailing vessels may sail for the Seal Fishery on the 1st March, and remain out as long as the Captain thinks fit, taking seals whenever he has the opportunity. The custom in sailing vessels is for the crew to get one-half of the catch for their share; in the steamers they only receive one-third.

a general average of 17,486 in the season of 1892. The 'Eagle,' of St. Johns, was subsequently lost in Lancaster Sound, where on the 27th July, she was nipped in the ice, and her crew, after bravely sticking to their rudderless and sinking ship, made Dexterity Bay on the 1st Sept., where they and the cargo were taken on board the 'Aurora' and the 'Esquimaux,' and the damaged ship was then deserted. She had on board at the time the produce of two whales and a "sucker," amounting to about a ton of bone and twenty-five tons of oil, in addition to seals, walruses, &c.*

The Greenland and Davis Straits sealing in the past season was very unimportant, and I am told that not more than 40,000 seals in all were killed, only 325 falling to the share of the Scotch vessels; of these 235 were brought home by the 'Perseverance,' which had wintered in Repulse Bay, and the 'Eclipse' and 'Nova Zembla,' from Davis Straits, killed forty-two and forty-eight respectively; four of the vessels were away at the Antarctic fishing, to which I shall refer further on. The total result, therefore, of the Northern Seal Fishery in which six Scotch vessels took part, was only 17,256 old and young seals, producing 204 tons of oil, representing at £19 per ton £3876, and the skins at an average, say, of 7s. each, a further sum of £6040, a total of £9915, as compared with a like valuation of £35,152 in the previous season.

Turning to the Davis Straits whale fishery, the result commercially is much more satisfactory. There were four Dundee vessels present, all of which secured fair cargoes, the 'Aurora' taking the lead with nine whales and two suckers; the 'Eclipse' following with eight all very fair fish, and the 'Esquimaux' and 'Nova Zembla' with four each.

The weather was very bad in the early part of the season, and the 'Eclipse' was the only successful vessel at the east fishery ground, killing two whales on the 13th and 16th of May, but she was detained in Melville Bay by heavy ice and stormy weather until early in July. Immediately upon reaching the west side of the Strait she fell in with whales, and after losing one on the

* In addition to those already mentioned, 21,500 seals were brought into St. Johns by local sailing vessels which do not come within our province.

5th July, killed on the 6th, 7th, and 9th, one on each day, and three others were killed early in September. In Pond's Bay Capt. Milne varied the pursuit by a little Reindeer-shooting; of these he secured twenty-seven, with occasional seals and walrus.

The 'Aurora' was very fortunate in crossing Melville Bay, and found the ice in Lancaster Sound in good condition. Her Captain lost his first whale, on June 26th, but next day killed two old females and their two "suckers." Again, on the 2nd July, he lost a whale, but on the following day killed a third female and sucker, and on the 9th, 10th, 11th, and 12th a whale was killed each day; one of these was accompanied by a sucker, which escaped, but was subsequently killed by the 'Eagle.'

The summer fishing being now over, the 'Aurora' steamed along the west shore of Lancaster Sound to Clyde River and Bute Island looking for whales, but without success until Sept. 27th, when two whales were sighted in Coutts' Inlet, and both killed; during the next fortnight many other whales were seen, but bad weather rendered their pursuit impossible, and it was not till Oct. 8th that her thirteenth and last whale was killed.

The 'Nova Zembla' was not successful till Sept. 17th, when she killed two very fine whales north of Coutts' Inlet, one yielding 25 cwt. of bone. Two others were subsequently killed and another lost. Amongst Capt. Guy's miscellaneous cargo were sixteen bears and four walruses.

The 'Esquimaux,' like the 'Nova Zembla,' was very late in finding the whales, but eventually killed one on Sept. 9th, two others early in October, and ultimately added a fourth, making her total catch four Black Whales, one Finner, thirty-nine Walruses, twenty-eight Seals, and five Bears.

The season was thus a very favourable one, notwithstanding spells of bad weather, and whales seem to have been plentiful. The result must be very cheering to those concerned, after the repeated bad seasons which have been experienced. It is much to be regretted, although inevitable, that the sucking calves, which are of small value, four of which were killed, should fall victims with their mothers, instead of surviving to grow into value; the death of the parent, however, seals the doom of the offspring, and it can hardly be expected that prizes so rich should be spared when opportunity offers for their capture. It is very satisfactory to hear of this evidence of the natural increase of the

whales in the Straits, the occurrence of suckers in the Greenland Seas being extremely rare.

Our friend Capt. David Gray could not content himself at home, and the 'Eclipse,' of whose success I have already spoken, having been disposed of, he took command of the 'Windward,' which was the only Scottish vessel in the Greenland Seas. The only whales seen by Capt. Gray were met with on May 6th, in lat. $78^{\circ}46'$ N., $22'$ East; of two seen at the same time one was killed, which yielded 19 tons of oil, and 19 cwt. of bone; the other escaped. The ice was found to be too far to the westward, so as to leave no cover on the Spitzbergen feeding banks, and after a fruitless search, he left for the south fishing-ground early in June, where no better success awaited him; finally, at the end of July, he made for home, weary and disappointed. The absence of the whales from the Greenland Seas in the past season is very remarkable, and a great contrast to the abundance which showed themselves in Davis Straits.

The total produce of the whale fishery was 33 Whales, 32 White Wales, and 75 Walrus; these yielded 389 tons of oil and 20 tons 16 cwt. of bone; the oil may be valued at £21 per ton, but as no bone has yet come into the British market the price is very uncertain; it may be taken, however, at about £1600 per ton, the price at which it is now selling in America (a very serious reduction upon the previous season), and at that price the total produce of bone and oil would represent a sum of £41,449, against a like valuation of £19,666 in the previous season.

The Dundee expedition to the Antarctic Seas, to which I referred in my last report, has proved commercially a great disappointment, and, so far as I can learn, of very little scientific importance. A large number of seals were killed, but, owing to the low price of produce, not sufficient to pay the expenses of the voyage, and no species of Right Whale was met with. The general professional opinion appears to be that the vessels started too late, and they were still further delayed by heavy weather before getting fairly on the voyage. The experiment, so far as Dundee is concerned, will not be repeated at present, but I understand that the Norwegian whaler 'Jason' has made a second trip southward, and probably, owing to the more economical management of these vessels, may find it to her advantage. The southern

seals are not so gregarious in their habits, and therefore more scattered, and not to be cleared off in the same wholesale manner as at the Newfoundland and Greenland young sealing; this is in their favour, but if they are pursued with the same relentless avidity as in the north, and do not speedily learn to shun their new enemy, their days are certainly numbered. A member of the late expedition writes to 'The Times' as follows:—

“The present generation [of Seals] has never seen man, and they survey him open-mouthed and fearful, during which process they are laid low with club and bullet. Sometimes they are so lazy with sleep that a man may dig them in the side with the muzzle of his gun, and, wondering what is disturbing their slumbers, they raise their head, which quickly falls pierced with a bullet. There may be only one seal on a piece of ice, which is usually the case with the larger kind; but the smaller kinds lie in half-dozens and tens, and as many as forty-seven were seen on one piece. Seldom do they escape—one cartridge means one seal.”

Of the species of the seals met with I have no certain information; I have seen nothing definite published, and no material seems to have reached our National Museums; but in a single paragraph devoted to this subject in a paper read by Dr. W. C. Donald before the Scottish Geographical Society in Edinburgh in January last, the species are said to be four in number, and are probably identical with those observed by Ross and previous voyagers in the same latitudes—namely, the Leopard Seal, *Stenorhynchus leptonyx* (de Blainville); the Crab-eating Seal, *Lobodon carcinophaga* (Gray); Weddell's Seal, *Lyptonychotes weddelli* (Lesson); and the rare Ross's Seal, *Ommatophoca rossi* (Gray); but I hear that Prof. D'Arcy Thompson, of Dundee, has had the zoological results of the voyage submitted to him, and we shall probably be better informed in due time. The only Cetaceans seen were a single individual of a species of *Megaptera*, which was harpooned and lost, a large number of *Balænoptera*, a species of “Grampus,” a “Bottlenose,” and several schools of what was “possibly a species of *Globicephalus*.” Of birds, twenty species in all were obtained.

The vessels left the Falkland Islands at dates varying from the 8th to the 11th December, and were no more heard of till the 'Polar Star' touched at Stanley Harbour on the 17th February, the interval having been spent in cruising in the neighbourhood

of the South Shetland Islands, reaching as far south as lat. 67° , and encountering great diversity of weather.

The commercial results of the voyage were 4000 seals taken by the 'Active,' 5226 by the 'Balæna,' 3572 by the 'Diana,' and 1908 by the 'Polar Star,' or a total of 14,706. The Norwegian ship 'Jason' is also stated to have returned with some 5000 seals; no *Monachus*, nor *Otariæ* were met with, and all the seals are said to have been in poor condition.

I have to express my thanks to Mr. David Bruce and Mr. R. Kinnes, of Dundee; Capt. David Gray, of Peterhead; Mr. Michael Thorburn, of St. Johns; and Mr. Walter Thorburn, of Greenock, for their kindness in supplying me with information from their respective ports.

THE MARTEN IN IRELAND.

BY G. E. H. BARRETT-HAMILTON.

I HAVE been much interested in the article on "The Marten in Ireland" which appeared in the last number of 'The Zoologist' (pp. 100—107), for I have been for some time collecting notes on the distribution and life-history of this animal in Ireland, and indeed of all our native Irish mammals. I had at first contemplated the publication of a list of localities in Ireland where the Marten has been found of late years, but an accumulation of notes has convinced me that this animal is much more common in the wooded parts of Ireland than is generally supposed, and consequently that such an article would be as unnecessary as one on the distribution in Ireland of such common Irish mammals as the Otter or Badger. I think the statement (p. 101) that "at one time, in all probability, the Marten must have been generally distributed in Ireland, but as civilization has extended inland from the east and south, and as woods have been cut down, and the country opened up by railways, drainage, and cultivation, so has this animal been gradually driven into the wilder portions of the north and west," needs considerable modification. No doubt the Marten is *now* driven out from the east and south, but it is only of late years that this has been the case, and I contend that even in the more highly cultivated parts of the eastern counties of Ireland it would be an impossibility to name a county in which

the animal has not occurred recently. Taking the eastern counties from north to south, the Editor's own notes establish its occurrence more than once in Antrim in 1893, while in Down, again (quoting from the same article), "amidst the wild and broken ground of the Mourne Mountains . . . the Marten will probably for some time yet to come defy the efforts of its would-be exterminators." From Louth and Meath I have no records by me, but there is little doubt that stragglers are still occasionally found in those counties, since they lie quite close to more favoured counties. From the small county of Dublin there is no recent record, but the outer parts of the county are not so far from the woods of Wicklow, which are still one of the strongholds of the Marten; and even in Wexford, "the model county" of Ireland, its occurrence has been noted as late as June, 1892 (p. 104), a fact which is not at all surprising when we consider that Wexford comes next to Kilkenny, a county in some parts of which the Marten is still plentiful.

I regret very much that I have not got by me all the notes which I have been able to collect on the distribution of the Marten in Ireland, but I propose to give such of them as I have, and which are not included in the last number of 'The Zoologist,' under the headings of their respective counties and in the order there adopted. I think it is a pity that the Editor should have arranged his information under "provinces." It would have been surely better to have followed some definite order, such as that given in Mr. A. G. More's 'Cybele Hibernica,' and to have disregarded the provinces altogether.

ULSTER.

Co. DONEGAL.—Mr. W. A. Hamilton, of Coolmore, Ballyshannon, writes (under date of Feb. 18th, 1892), "The Marten is, I should say, extinct here, but used to exist some twenty years ago." Mr. A. R. Wallace told me (in 1892) that he saw a Marten, about ten years previously, on the carriage-drive at Loughesk, near Donegal (*vide infra*, the Rev. C. Irvine's notes for Co. Fermanagh).

Co. ANTRIM.—The sex and length of the Portglenore specimen were stated to be "male: 2 feet 9 inches," by a correspondent who wrote in 'Land and Water' (April 22nd, 1893), under the signature "J. A. B."

Co. TYRONE.—See Co. Fermanagh.

Co. FERMANAGH.—The Rev. C. Irvine wrote (Feb. 3rd, 1890), "known about 1880 to exist at Kellindeas and other places along Lough Erne, especially at Castle Caldwell, at the north end of the lough." He added that the "Marten was formerly common enough in certain places. Last actual occurrence July, 1869."

LEINSTER.

Co. MEATH.—The Marten trapped by Mr. Longworth Dawes (*vide infra*, under King's Co.) was trapped just over the border of this county.

Co. WESTMEATH.—Capt. J. J. Dunne informs me that he has met with the Marten in this county, but gives no instance. Mr. R. B. Coffy, of Newcastle, near Killucan, has sent me a description of an animal trapped there about 1885 by a rabbit-catcher, as to which I have no doubt, from his description, that it was a Marten.

Co. KILDARE.—Capt. J. J. Dunne informs me that he has met with the Marten in this county.

Co. DUBLIN.—A good many years ago two were trapped in the gardens of Leixlip Castle" (F. and W. T. Longworth Dawes, *in lit.*, Dec. 30th, 1892).

Co. WICKLOW.—Mr. T. A. Tombe informed me (in 1891) that Martens are plentiful in the woods about Glenealey, and that Dr. Seeper, of Rathdrum, got nine in one season. They are most readily killed when the bilberries are ripe, for they are very fond of the berries. I have an interesting letter confirmatory of this from Dr. Seeper, but cannot just now lay my hands on it.

KING'S Co.—A female Marten was trapped in July, 1892, at Greenhill, Emdenderry, by Mr. T. Longworth Dawes, who sent it to Mr. Williams, of Dublin, for preservation. Mr. Longworth Dawes writes that "It was a pretty old doe, and had not had young that season; I trapped the whole place in the hope of getting another, but without success. I heard since of an animal being seen several times about four miles from this, which I concluded was another Marten; but from what I have recently learned, I think it is open to doubt whether it is not an escaped Polecat-ferret."

QUEEN'S Co.—Capt. J. J. Dunne states that he has met with the Marten in this county.

Co. CARLOW.—See Kilkenny. Mr. P. W. Trim, of St. Mullins, wrote, in August, 1892, that he thought the decrease in [the number of Squirrels in the woods of St. Mullins was due to the presence of Martens. He added, “The Marten produces about six young ones in May or June, generally in old hollow trees, clefts of rocks, &c.” Mr. C. F. Deane Drake informs me that the fishermen of the Barrow, about St. Mullins, state that the Martens will enter the fishing-cots and take trout out of them.

Co. KILKENNY.—“The woods of Woodstock are frequented by the *Mustela martes*, Yellow-breasted, or Pine Marten, a different animal from the White-breasted Marten, *Mustela foina*, which is destructive to sheep; the former never quits the woods, but occupies the nests of scald-crows, killing their young” (Tighe’s ‘Kilkenny,’ 1802, p. 570). Mr. J. H. O’Connell writes that a Marten was killed by the foxhounds, but cannot give the exact date. In certain of the wooded parts of Kilkenny and Carlow the Marten is still plentiful, and I have received specimens within the last year or so, and heard of others which were kept as pets in New Ross.

Co. WEXFORD.—The Marten probably occurs now only as a straggler, from Kilkenny, Carlow, or Wicklow, though no doubt it was regularly to be found in the wooded parts of the county until a few years ago. I have the following notes from this county:—Mr. Byrne, of Rosemount, New Ross, states that “Marten-cats have been shot about twenty-five years ago, since which time none have been seen” (‘Irish Sportsman,’ April 2nd, 1892). Mr. John Plummer, lately steward at Kilmanock, stated that about thirty years ago he saw and chased a Marten with two terriers near Newtownbarry; it took to a tree, however, and finally escaped. The Marten seems to have been common enough then, for Mr. Plummer stated that they could be heard in the night “whistling,” and that people used to watch their lambs at night to save them. Mr. J. S. Deane Drake, of Stokestown, New Ross, wrote (Oct. 1st, 1888):—“I trapped three Marten-cats (Pine Martens) here about fifteen years ago, but have not heard of any since. They were taken in a wire-trap, and showed a great fight with the dogs when let out.” No doubt these are the “four” specimens alluded to on page 104 of the Editor’s article. Dr. Cookman, of Kilkea House, Enniscorthy, wrote (Aug. 28th, 1888):—“I think the Marten is now totally extinct in this

neighbourhood. The last I have seen (now twenty-five years since) were at my brother's place, one and a half miles from here. There was a large pine-grove, and about 150 yards from it, in the centre of a field, was a clump of large beech-trees. One was decayed near the stem, with a hole and a long burrow. In this place two Martens made their residence, but they were so wary that, although I watched them night and day, I could not get near them. After some time, finding they were watched, they moved away, and I never saw them afterwards, nor have I seen one since, nor even heard of one. The common people call the Weasel [*i. e.* Stoat] a Marten. Mr. C. B. Moffat wrote from Ballyhyland (Oct. 16th, 1888):—"A few years ago my father lost a number of lambs in a manner that strongly suggested the work of an animal of the weasel kind, the throats being cut, the blood sucked, and the carcasses left. Traps were set, and, after a considerable number of lambs had been slaughtered, an animal was caught which the men took for a young fox and released. The destruction of lambs then ceased." The animal could hardly have been anything but a young Marten, as the events recorded occurred too early in the spring for young foxes to be about. On May 1st, 1892, a Marten was trapped at Coolbawn Cottage, near Ballyhyland, as recorded in 'The Zoologist' for March, p. 104. Col. H. Alcock, of Wilton Castle, in a letter to Mr. C. F. Deane Drake, stated (Oct. 15th, 1888), that "The last Marten-cat was trapped here about fifty years ago." Miss S. Fothergill told me, in 1887, that about ten years previously a Marten was killed at Berkeley, near New Ross; it had its home in a hole in a bank. Major James Glascott told me (in 1887) that a Marten was killed at Alderton, about six miles from New Ross, about ten years ago. He remembers Martens in the county, and says that they used to kill the lambs. "G. H. K." writes to the 'Irish Sportsman' (June 18th, 1892), "I have the skin of one that was killed somewhere New Ross way." Most of the County Wexford is copse, highly cultivated, and quite unsuitable for Martens.

MUNSTER.

Co. CLARE.—G. H. K., writing in the 'Irish Sportsman' (June 18th, 1893), confirms the statement that Martens occurred on the estate of Raheen, Tangraney, and adds that, owing to the protection afforded to them by the proprietor, "they overran the counties of Clare and Galway. One gentleman, near Mount

Shannon, lost seventeen pheasants in one night, destroyed by one cat that was killed, gorged with blood, in the morning." Martens "are sparingly scattered all through Ireland, especially in the wooded districts." Mr. E. G. Pennington, Commandant of the Royal Irish Constabulary Barracks in Dublin, states that in 1891 he met with the Marten about ten miles from Ennis. He writes:—"I was fishing in that neighbourhood, and the local Sergeant of Police told me of some Martens having robbed two bee-hives, and, traps having been set, two were caught one night, and the sergeant made the skins into a cape for one of his children." In the summer of 1892 Mr. Pennington was again in Clare, and found Martens "still fairly plentiful in the same locality. In the woods in the neighbourhood there are a great number of wild cherry-trees which bear a good deal of fruit, and the owner of the property was lamenting the fact that the Marten-cats eat them all, and was puzzled to know how they managed to get at the fruit at the ends of the long pendulous boughs. Another place I have heard of lately as still the haunt of the Marten is in the large woods on the shores of Lough Neagh." A skin of a Clare Marten, kindly sent me by Mr. Pennington, measured 2 ft. 4 in., total length, and 1 ft. 7 in. to the base of the tail; the throat was yellow, and the tips and backs of the ears light-coloured. Interesting notes on the propensity of the Marten for honey and robbing bee-hives will be found in 'The Field' for April 4th, 1871, May 17th, 1873, and Feb. 10th, 1877.

CO. TIPPERARY.—Capt. J. J. Dunne informs me that he has met with the Marten in Tipperary, and there is a specimen from this county in the Dublin Museum of Science and Art at Leinster House, presented by Mr. J. C. Springfield. Mr. E. G. Pennington states that in 1861 he saw one which was taken in a rabbit-trap at Rockforest, near Roscrea. The present owner of Rockforest informs me that "The Martens here are very seldom seen, and are evidently very shy animals. The last I saw was in a grove, and immediately it saw me it ran up an ivy-covered tree, where it quickly concealed itself." He states in another letter (Oct. 26th, 1892):—"The Marten-cats have been often caught here on the adjoining place (Timoney Park) from time to time, and there are still some of them about, but they are not nearly so numerous as formerly, and they are very seldom seen; in fact, only one of them was observed last year."

Co. KERRY.—Mr. J. C. Parker, of Winchester, informs me that Martens are still fairly numerous on Lord Kenmare's property. Mr. J. Charney, of Portarlinton, writes that while out shooting he once came across a Marten at Glenbeigh House, midway between Rosteigh Harbour and the Hotel at Rosbeigh. I got four skins . . . from 'Monghalevane' in the 'Black Valley' between Killorglin and Kenmare, at the southern side of the Reeks of Killarney, and I have heard that at one time, some fifteen years since, no fewer than sixty skins were got for the late Mr. Herbert, of Muckross, in the same place; the throat-fur being a creamy yellow . . . I have seen more of their skins at the house of the MacGillycuddy of the Reeks, but I never saw one alive, except on the occasion mentioned above—that is, a wild specimen." Mr. T. Longworth Dawes informs me that he has seen skins from this county. Mr. W. F. de V. Kane, writing from Ardtully, Kenmare (June 25th, 1893), states that "I hear there are Marten-cats frequently to be seen here in the woods."

Co. CORK.—Capt. J. J. Dunne has met with the Marten in this county, but gives no exact locality nor date. Mr. E. G. Pennington writes:—"I met with the animal at Killarney about 1863. I had taken down some otter-hounds to hunt the country, and, when in a very remote part of the mountains, came on a very hot drag, which led us away towards some high rocks, in which a Marten took refuge, but not before we had run him well in view for some distance. I have no doubt that in that remote and savage region the Marten still holds his own."

CONNAUGHT.

Co. SLIGO.—There is a specimen from this county in the Dublin Museum of Science and Art. Mr. H. Lyster Jameson writes (March 26th, 1893):—"The Marten still abounds in the Ben Bulbin range in Co. Sligo. I saw unmistakeable signs of its presence in the caves of Gleniff, and the boy we took for a guide knew the animal well. Inland, at Markree Castle (the seat of Col. Cooper), the keeper has met with it, but thinks he has by this time exterminated it."

Co. LEITRIM.—Mr. Williams, taxidermist, Dublin, had a specimen from Manorhamilton in 1892. In reply to a letter of enquiry, Mr. J. G. Phillips, of Manorhamilton, writes (Dec. 30th, 1892):—"The Marten-cat is fairly plentiful here. The speci-

men Mr. Williams is stuffing for me was caught on Glencar mountain. I believe they also frequent Glenode and Glengariffe, and I have known one to be killed by a terrier, quite close to this town, in the open fields."

Co. GALWAY.—Capt. J. J. Dunne has met with the Marten in this county. The Hon. L. G. Dillon, of Clonbrock, Ahascough, writes (Feb. 9th, 1892):—"A 'Pine Marten' was shot here, I believe, long ago, but I have heard of several being killed in other parts of the country lately. Sir William Gregory, of Coole, near Gort, has a coat trimmed with the fur of some killed quite lately in his woods." *Vide* also G. H. K.'s notes under Co. Clare.

The above rough notes, combined with the Editor's statistics, leave only the counties of Monaghan, Cavan, Louth, Limerick, and Roscommon, absolutely without records, though the pretensions of some few other counties to include the Marten in their fauna are somewhat slender. It must be remembered that much of Ireland is now open, and unsuited to the habits of the Marten.

I regret very much that I have been unable to make this article more complete. I have numerous other notes on the Marten, on which I cannot now lay my hands, and a good many references to records of its occurrence in Ireland, which have from time to time appeared in 'The Field.'

I will conclude by giving an extract from a law still in force in Ireland, which shows how common Martens were in that country a hundred years ago, insomuch that the reward for killing either an Otter or a Marten was the same. By the 27th George III. chap. 35, it was enacted, amongst other things, "That from and after the 1st day of July, 1787, any person or persons who shall take, kill or destroy otters, martens, weazels, rats, cormorants, kites or magpies, shall receive for every otter or marten, 5s.; for every weasel, 1s.; for every cormorant or kite, 6d.; for every magpie, 3d.; and for every rat, 1d."

Mr. Robert Patterson, of Malone Park, Belfast, sends the following corrections and additions for Ulster:—

Co. DONEGAL.—Thompson says, "J. V. Stewart notes the yellow-breasted Marten in his catalogue of the mammalia of this

county." It is also mentioned by the late Col. J. Whyte. Major Hamilton, of Ballintra, informs me that in one year, between 1865 and 1870, he shot one and trapped another, and he had trapped some before these dates. He says they used to steal plums on the garden wall, and be caught on the top of it.

Co. ANTRIM.—Two were killed in Glenarm Deer Park in 1866, and Lord Antrim informs me this is the only instance where a pair was caught at one time. About forty years ago one was trapped at Garron Tower. Cookstown is not in Co. Antrim, but in Co. Tyrone.

Co. FERMANAGH.—In former times it was frequently found in wooded demesnes along the shores of Lough Erne, but now seems to be quite unknown there. The last Marten seen at Florence Court was killed by Lord Enniskillen about thirty years ago. One was taken in July, 1869, at Killaleas, Lough Erne. The Earl of Erne tells me that about twenty years ago he killed a Marten while covert-shooting on an island in Lough Erne. An old man who was with him at the time stated that they used to be plentiful there when he was a boy, but that he had not seen one for at least forty years.

Co. MONAGHAN.—In 1891 one was trapped at Glasslough.

Co. ARMAGH.—Capt. Bond Shelton has sent me the skin of one trapped at the Argory, about twenty-four years ago.

Co. DOWN.—It was in 1854, not in 1884, that some were seen at Portavoo, between Bangor and Donaghadee. Montalto, Ballynahinch, is the name of Capt. Ker's property.

ON AN EARLY NOTICE AND FIGURE OF THE GREAT AUK.

BY MILLER CHRISTY, F.L.S.

ALTHOUGH the early literature relating to the Great Auk seems to have been, on the whole, pretty thoroughly investigated, the record to which I have now to call attention has been almost entirely overlooked, while the figure accompanying it has, I believe, wholly escaped notice, although both the passage and the woodcut are by no means devoid of interest.

The record in question appears in the Fourth Book of John Seller's 'English Pilot' (London, folio), a work which went

through a number of editions in the latter part of the seventeenth century and throughout the eighteenth. The first edition, which was published about the year 1673, does not contain the passage, which first appears (so far as I have been able to discover) on p. 17 of the edition of 1728. It occurs among some directions for sailing upon the coast of Newfoundland, and reads as follows:—

“Some Directions which ought to be taken notice of by those who sail to Newfoundland.

“The Bank of Newfoundland would be of very great service to those that are bound to that coast, was the said Bank exactly laid down. * * *

“There is also another thing to be taken notice of, by which you may know when you are upon the Bank. I have read an



[Figures of *Alca impennis*, from Seller's 'English Pilot.']

“*Note.*—These fowls never fly, for their wings are very short, most like the fins of a fish, having nothing upon them but a sort of Down and short Feathers.”

Author that says, in treating of this coast, that you may know this by the great quantities of fowls upon the Bank, *viz.* Sheerwaters, Willocks, Noddles, Gulls, and Pengwins, &c., without making any exceptions; which is a mistake, for I have seen all those Fowls 100 Leagues off this Bank, the Pengwins excepted. It's true that all these fowls are seen there in great quantities, but none are to be minded so much as the Pengwins, for these never go without the Bank as the others do, for they are always on

it, or within it, several of them together, some times more, other times less, but never less than two together. They are large fowls, about the bigness of a Goose, a coal-black Head and Back, with a white Belly, and a milk-white spot under one of their Eyes, which Nature has ordered to be under the right Eye, and extraordinarily remarkable. For my part, I never saw any with such a spot under their left Eye, the figure of which I have here set down to facilitate the knowledge of them, &c."

This information also appears in identical terms, or with wholly unimportant variations, in the editions of 1737, 1755, 1760, 1775, and, I suppose, in that of 1794 (which, however, I have not seen), to judge from the fact that Sir Richard Bonnycastle, in his 'Newfoundland in 1842' (London, 2 vols., 8vo, vol i. p. 232), quotes a portion of a very similar passage from the edition of that year. The same figures (here reproduced) occur in all the above-mentioned editions, unless they be omitted from that of 1794.

Mr. Grieve (who does not seem to have referred to Seller direct) quotes the fragment given by Bonnycastle, with further variations of his own ('The Great Auk,' p. 66, *n.*); and, like Bonnycastle, he makes no reference to the figures, which appeared in the various editions of Seller's work, and which are here reproduced in facsimile by the photo-zinco process. Prof. Newton, too, in his article on "The Gare-fowl and its Historians," published in the 'Natural History Review' for October, 1865, refers (p. 483) to Seller's 'English Pilot' as "a work we ourselves have not been able to examine," and quotes, in consequence, only the fragment given by Bonnycastle. My attention has been kindly drawn to these facts by the Editor. As, therefore, two leading writers on the history of the Great Auk have been unable to obtain access to the original work, it seems well worth while to reproduce here the passage and the illustrations in question.

Whilst upon this subject, it may be worth while to mention that, upon many of the earliest charts of Newfoundland (1500-1560), which I have lately had occasion to study, there are represented several islands bearing the names "Ilha aves" or "Isle des Oiseaux," which may certainly be regarded as an indication of the abundance of sea-fowl—the Great Auk, no doubt, being among the species—upon some of the islands off

that coast. Thus, on the map of New France, drawn by Jacomo di Gastaldi about the year 1550 for the third volume of Ramusio, we find Newfoundland divided into a number of islands, upon which are shown large birds and bears, while on the intersecting water-ways are more birds, and in the adjacent seas are represented various fishes and cetaceans—to say nothing of several curious little devils upon the imaginary “Island of Demonios.” In several places, natives are represented shooting at the birds with bows and arrows as they rest upon the land near the sea-shore, which may be taken to indicate that the birds intended to be represented were large and tame, and were, therefore, very likely Great Auks, notwithstanding the fact that some, at least, of them are represented with wings; for a non-observant seaman, or his draughtsman, might, under the circumstances, think it most proper, when drawing birds, to draw them with wings, whether the particular species possessed them or not.

It may be also worth while to mention that the name Fugla-skeir, or Fowl Skerries, on the south-west coast of Iceland, which is commonly supposed to have arisen in consequence of the large number of Great Auks inhabiting the rocks in question, is very ancient; for the name appears in the form of “Flogascer” (Fogla-sker) on the celebrated Zeno map, which was drawn within a few years of the close of the fourteenth century, though not published until 1558.

ON THE SIZE OF THE BRITISH NEWTS.

By G. A. BOULENGER.

THIS is an enquiry which has hitherto been somewhat neglected. We know, of course, that the Crested Newt, *Molge cristata*, is the largest; that next comes the Common Newt, *M. vulgaris*; and last, the Palmated, *M. palmata*; but few accurate measurements have yet been published of the maximum length to which each species is believed to grow in this country. I have for some time been endeavouring to collect the finest specimens procurable for the British Museum, and have kept note of their dimensions, as well as of the length of the largest continental specimens mentioned in the literature or preserved in the Museum. Curiously, within the last twelve months I have

succeeded in adding to the collection specimens of all three species, which, with the exception of the male *M. palmata*, are larger than any on record, whether British or continental. I would request the readers whom this note may interest to endeavour to ascertain whether any specimens can be found exceeding the dimensions indicated below.

1. *Molge cristata*.

De l'Isle (Ann. Sc. Nat. xvii. 1862, p. 366) for France, and Fatio (Vert. Suisse, iii. p. 530) for Switzerland, give the following dimensions of the largest specimens measured by them:—

				<i>Males.</i>		<i>Females.</i>	
				Nantes.	Basle.	Nantes.	Geneva.
Total length	...	...	millim.	141	137	150	148
Length to cloaca	...	„	—	—	70	—	71

Schreiber (Herpet. Eur. p. 48), without specifying locality or sex, says the species grows to 160 millim.; and Bell (Brit. Rept.) gives 6 inches (152 millim.) as the maximum length.

The largest specimens I had examined until quite lately were sent to me from Argenton (Indre), France, by M. R. Parâtre, and measured:—

				<i>Male.</i>	<i>Female.</i>
Total length	...	...	millim.	142	157
Length to cloaca	...	„	—	72	76

In the second week in February, of the present year, Mr. Edward Dodson found in some puddles at Hampton, Middlesex, numerous specimens in full breeding costume, some of which he kindly brought me for the Museum collection. I visited the place with him three weeks later, and, with the aid of a small net, we succeeded in capturing 66 specimens in half an hour. Among these some even exceeded, if but slightly, my French specimens, and are, so far as I am aware, the largest on record:—

				<i>Male.</i>	<i>Female.</i>
Total length	...	...	millim.	144	162
Length to cloaca	...	„	—	77	87

2. *Molge vulgaris*.

The length of the largest specimens (from Basle) is given by Fatio as:—

			Male.	Female.
Total length	...	...	millim. 98	80
Length to cloaca	...	..	45	40

which concords with the length assigned to British specimens by Bell.

Larger specimens, from Knockholt, Kent, were presented to the British Museum in May last by Mr. W. Blackwell. They measure :—

			Male.	Female.
Total length	...	...	millim. 104	94
Length to cloaca	...	..	45	46

I had previously collected nearly equally large specimens near Brussels.

3. *Molge palmata*.

This is the smallest European species. Schreiber's statement that it is usually somewhat larger than *M. vulgaris*, unless copied from Leydig, is to be explained by his having confounded *M. boscae* and *M. palmata* under the name of *Triton helveticus*. His specimen, 88 millim. long, therefore, probably belongs to *M. boscae*. The largest specimens studied by Fatio (*op. cit.*), from Switzerland, Lataste (Faune Herpet. Gironde), from S. France, and v. Méhely (Math. Term. Köslern., Budapest, xxv., 1893, No. 4), from Freiburg i. Br., present the following dimensions :—

	Males.			Females.		
	Geneva.	Freiburg.	Gironde.	Geneva	Freiburg.	Gironde.
Total length* millim.	86	74	67	73	76	74
Length to cloaca ..	37	34	—	34	34	—

Specimens which I obtained in April last, at Fowey, in Cornwall, nearly equal (♂) or exceed (♀) any of the above :—

			Male.	Female.
Total length	...	...	millim. 80	85
Length to cloaca	...	..	36	42

* Including the caudal filament.

NOTES AND QUERIES.

MAMMALIA.

Supposed Occurrence of *Vespertilio murinus* in England: Correction of an Error.—In reply to enquiries as to the evidence for including the Mouse-coloured Bat (*V. murinus*) in my List of the *Vespertilionidæ* found in the Isle of Wight (see Venables' 'Guide,' 1860), I may explain that it was the late Mr. F. Bond who wrote me that he had obtained this species at Freshwater, and I relied altogether upon his identification, knowing how very accurate and careful he was; but, some years afterwards, he wrote that the large Bat which he had found at Freshwater was the Noctule, *V. noctula*, and not *V. murinus*. I remember, also, that the same mistake was communicated to the Linnean Society by the late Prof. Thomas Bell, to whom I had mentioned it. Another Bat, given as Daubenton's Bat in Venables' 'Guide,' Mr. Bond told me proved to be *V. mystacinus*. Both errors were set right by myself in a list of Isle of Wight Quadrupeds given in Jenkinson's 'Practical Guide to the Isle of Wight' (1876), and I am only sorry that I did not make the correction more generally known, since it concerns such a very dubiously British species. — A. G. MORE (Dublin).

Stoats in Ermine Dress.—A nearly white Stoat was caught in a mole-trap, near here, on March 5th. The only parts retaining the brown colour are narrow rings round the eyes. A precisely similar example was killed at the end of February or beginning of March, 1891. I have examined several other Oxfordshire examples of these "spectacled" Stoats, and it appears that a ring of fur round each eye are the parts which least often become white. In a previous note ('Zoologist,' 1884, p. 112) I have remarked upon the assumption of the ermine dress by English Stoats in mild winters.—O. V. APLIN (Bloxham, Oxon).

Squirrels destructive in Plantations.—A short time ago we remarked the ground beneath a spruce fir strewn with young shoots, cut off at the terminal joint of each sprig; the cluster of buds at the severed joint and most of the single buds at the extreme point were empty. Another spruce has since been attacked, and we are much afraid of the havoc extending to a very handsome American pine close by. As during the past winter some cattle belonging to a neighbour were killed by browsing upon a yew, my husband cut off the lower branches of a fine old tree on our lawn, and, on passing by it a few days ago, he was much surprised to find the ground strewn with terminal shoots nipped off, as if with a pair of clipping shears.

On sending a boy to pick them up, he returned with two good-sized baskets filled with sufficient yew shoots to have killed most of the cattle now feeding on the lawn; these, I need hardly say, were promptly buried. Squirrels have become very numerous in our plantations, and one has been seen under the spoiled spruce fir, but not in the act of nipping off the young shoots. Our puzzle is, if these little creatures are guilty of the mischief, how do they reach to the ends of the branches, which in some instances would hardly support the weight of a small bird? If they are not guilty, what could have caused the young shoots to fall off in such a strange manner? One tree seems completely bared. Is it possible that the one night's frost which killed so many indoor plants, and even broke their china flower-pots, could have injured trees in such a manner?—FRANCES I. BATTERSBY (Cromlyn, Rathowen, West Meath).

Habits of the Bank Vole.—Mr. Newman Neave suggests (p. 109) that the Bank Vole is less hardy than some other small mammals, and succumbs to hard frost. I do not think that this explains why the species becomes less plentiful in winter. What we find in Lakeland is, that in cold weather the Bank Vole lies up in its favourite winter home, *i. e.*, in heaps of turnips. It is generally found in parties of five in winter. We have had some mounted for the Carlisle Museum, and at my suggestion Mr. Thorpe made a glass case for them, so that our taxidermist could keep them in the bird-stuffing room and mount them from life. Those we have kept this winter have entertained us not a little by their life and energy; they have fought a good deal, and I confess we enjoyed their tussles, as they bite and spar with one another in the angriest way. Unfortunately one of their battles ended fatally, and the vanquished Vole was eaten by his rival. It is pretty to see the little fellows sitting up on their haunches, nibbling the pips of apples which they hold in their paws. They are very fond of preening their fur, which they manage to keep in splendid order. Their appetites are truly astonishing; we feed them chiefly on apples, but they are very partial to turnip-roots, and where numerous must do a good deal of damage to the root crops.—H. A. MACPHERSON (11, Victoria Place, Carlisle).

Marten in Co. Dublin.—In reply to your request for information respecting the occurrence of the Marten in Ireland, I have much pleasure in informing you that in the month of November last I saw what was undoubtedly a Marten in the neighbourhood of the village of Golden Ball, Co. Dublin. I was at the time driving, and the animal ran for about a hundred yards along the road in front of the pony. At first I thought it was a Stoat (known in this locality as a Weasel), but it suddenly stopped and sat just in the attitude depicted in 'The Zoologist' for February, and I have no doubt whatever that it was a Marten. When I got within about

twenty yards of it, it slipped quietly into the bushes, at the roadside, and was lost to view.—J. J. DOWLING (Stillorgan, Co. Dublin).

BIRDS.

Varieties of the Goldfinch, Greenfinch, Reed Bunting, and Blackbird.—In October last one of the prettiest varieties of the Goldfinch I have ever seen was caught with other Goldfinches near Cambridge. It is pure white, having on each wing a broad band of the brightest yellow; eyes pink. A pale grey female Greenfinch was shot near Cambridge about the same time. In December a very pretty white variety of the Reed Bunting was shot, also near Cambridge; it has many grey feathers interspersed amongst the white ones, and is a striking and uncommon variety. I have added these birds to my collection of varieties, which now contains over 450 specimens of 107 British species. When in York, in November last, I bought a very curious variety of the Blackbird. The plumage is slate-coloured; the top of the head pure white; and the throat, wings, and breast also white.—J. WHITAKER (Rainworth, Notts).

Heron carrying off a Waterhen.—A Heron came down on a Waterhen at the brink of a pond here a short time ago, carried it off to a high bank (both birds screaming), and, after giving it two or three pecks, flew away with it. I have known Herons to carry off Water Rats, but never heard before of their getting hold of Waterhens.—JOHN DILLON (Lismullen, Navan, Co. Meath).

White Robins in Surrey.—In the summer of 1893, among a number of Robins hatched in the garden of Wilmer House, Ham, Surrey, was one white bird. I had two opportunities of watching the bird at very close quarters, as he was very tame, and a short time ago I heard that it had been shot by a boy friend, and have since seen it in its stuffed state. It is a very large specimen, nearly white, save for a little brownish colour on the back, and a slight reddish patch on the throat; legs long and slender, and semi-transparent; eyes black, which I am informed was their colour in the flesh. I heard of another white Robin having been seen in Richmond Park.—ARTHUR W. HASTED.

Waxwing in Co. Down.—On February 23rd last, I examined a Waxwing, *Ampelis garrulus*, sent in from Portaferry, Co. Down. It was an immature male, had seven "wax" points on each wing, and measured eight inches from tip of bill to end of tail. It had been found in a potato shed and was much emaciated, weighing only $1\frac{1}{4}$ oz.—ROBERT PATTERSON (Malone Park, Belfast).

Cuckoo seen in March.—We are accustomed annually to hear reports of the Cuckoo being seen or heard long before the usual date of its arrival. Such rumours, however, generally come from irresponsible persons, some

of whom do not know a Cuckoo from a Hawk, and others probably are deceived by cuckoo-clocks in cottages, or by clever imitations of country lads. It seldom happens that we receive such circumstantial evidence as the following. Dr. A. J. Fleming, of Ragleth House, Church Stretton, Salop, writing on March 6th, says:—"When driving along a country road yesterday (March 5), I had a very good view of a Cuckoo. As it is more than a month earlier than the date at which the birds usually arrive, I thought it might interest some of your readers to record the fact. I am quite satisfied that it was a Cuckoo which I saw, and that I did not mistake any other bird for one. We get a great number of these birds here every spring, and I am quite familiar both with their appearance and mode of flight. Moreover, my servant man, who also knows the birds well, saw it also. It flew out of the hedge nearly opposite my dog-cart, and flying low along the ground for about fifty yards, again entered the bottom of the hedge. I marked the spot, and on coming close to it the bird flew out again, and again flew along in front of me and entered the hedge as before. This was repeated four times, so that I had a very good opportunity of observing it. The first time I was somewhat doubtful whether it was not a Sparrowhawk, which the Cuckoo somewhat resembles, and had I not seen it a second time I should have remained doubtful of its identity. Its mode of flying along the bottom of the hedge, and the way in which it popped in and out, were not at all like the movements of a hawk. It gave no note. Assuming the accuracy of my observation, it is an interesting question how it comes to be here so much before the usual time. Can it have passed the winter in this country? or might it possibly have reached our shores aided by the long-continued south-west gales to which we have been treated this winter? I should be glad to hear what some of those who are learned in such matters have to say on the point."—A. J. FLEMING.

Snow Bunting at Bolton-le-Moors.—It may be of interest to place on record the appearance of this species in this district, two female birds having been shot at Horwich during the last week of February. In both the ovaries were much developed.—C. E. STOTT (Bolton-le-Moors).

King Eider off Achill Island, Co. Mayo.—On the 12th Dec., 1892, I fell in with a fine male King Eider, *Somateria spectabilis*, near Dugort, Achill Island. It must be a rare visitor to the West of Ireland, for I never saw one in the flesh before, although, considering the numerous bays and inlets about here, it is quite likely that other specimens have occurred and escaped notice.—J. R. SHERIDAN (Dugort, Achill Island).

Surf Scoter off Achill Island, Co. Mayo.—The Surf Scoter, *Edemia perspicillata*, has several times occurred here of late years. I have myself seen three. Two were met with in October, and one in December. One of these I shot on the 25th Oct., 1870. The two were very tame, and allowed me to approach within twenty yards of them. Unfortunately, I

had only a large rifle with me at the time, and so failed to secure more than one. The protuberance at the base of the upper mandible, and the white patch on the back of the neck, were very conspicuous, and it was therefore impossible to mistake the species. The third specimen I observed in December, 1890, in Duach Bay. It was diving outside the breakers, and I saw it distinctly through a glass. The surf was too heavy to allow of a boat being launched, so that I was unable to go in pursuit of it. The only one of these three which I shot was an immature female, and I am informed by Mr. A. G. More, of Dublin, that this is the eighth specimen, so far as is known, which has been obtained on the coasts of Ireland.—J. R. SHERIDAN (Dugort, Achill Island).

Early Nesting of the Heron.—On March 3rd a friend and I found a Heron's nest containing five eggs. Is not this an unusual number? None of the others examined contained more than two, though the remains of an egg below one of the nests in which two were noticed leads us to believe that three had been laid in that one.—J. A. BUCKNILL (Hylands House, Epsom).

Woodcocks Breeding in the Lake District.—In connection with Mr. G. W. Murdoch's note under this heading (p. 112), I may mention that in the spring of 1888 I found a Woodcock's nest within a couple of miles of Keswick. It was placed on some heathy ground and contained four eggs, from which the old bird rose as I passed. An interesting point in the distribution of this species during the breeding-season is the fact that it nests every year in considerable numbers in the New Forest, Hampshire.—HARRY F. WITHERBY (Blackheath).

Mealy Redpoll in Achill Island, Co. Mayo.—Two specimens of *Linota linaria*, Linn., a rare visitor to Ireland, were shot in Achill Sound, in February, 1893, by a lady resident there, Mrs. Harvey, of Glenderary, who presented one of them to the Dublin Natural History Museum. I am inclined to think that this bird visits Achill Island every winter, but escapes notice from its small size. I remember seeing some, several years ago, feeding on a bunch of thistle-heads, as I informed Mr. A. G. More by letter, but not having secured a specimen, I suppose he did not consider the identity of the species sufficiently established to record it.—J. R. SHERIDAN (Dugort, Achill Island).

Buffon's Skua off Achill Island, Co. Mayo.—On the 29th Sept., 1892, I shot one of these birds near the village of Duach. Being a male in the adult plumage, I had no difficulty in identifying it.—J. R. SHERIDAN (Dugort, Achill Island).

Waxwing near Newmarket.—Mr. Baker, the taxidermist at Cambridge, has a male Waxwing which, he informs me, was shot at Balsham,

near Newmarket, and was sent to him for preservation on Feb. 26th.—G. E. H. BARRETT-HAMILTON (Trinity College, Cambridge).

Date of arrival of Lesser Whitethroat.—A slight error has crept into my "Notes," p. 93. The date of the arrival of the Lesser Whitethroat in Warwickshire in 1892 should be April 9th, not April 2nd. But the 9th even, is a very early date for it. The average date of my observation of this species in North Oxon for twelve years (1880–1892, omitting 1883, when I probably overlooked it, and did not note it until May 21st), is April 29th. If 1892 is omitted, the average date for the eleven years is April 30th. On p. 98, for "two yards" read "ten yards."—O. V. APLIN (Bloxham, Oxon).

Ducks assuming Drakes' plumage.—My remarks on the partial assumption by female birds of male plumage (p. 15) has elicited from the Rev. H. A. Macpherson a very interesting correspondence, in which he mentions a female Scoter, *Ædemia nigra*, shot and dissected by Mr. Bartlett, of Maidstone, in which the brown plumage of the upper parts was replaced by black. He has also reminded me of a similar case of a female Velvet Scoter, *Æ. fusca*, in my own collection, which has no lore spot and no ear spot, and a dark brown belly unsuffused with any grey, and a very dark back. Both these birds are considered to be cases in point, viz., females assuming male plumage, but I had forgotten all about the Velvet Scoter when writing on this subject before. It does not appear, from our standard works on Ornithology, that the adult plumage of the female Scaup Duck has been recognised by British writers, and as the females on two or three occasions have been suspected of assuming male plumage, I should like to say something about them. From the Rev. H. A. Macpherson I have received eight picked female Scaups; from Mr. Caton Haigh, three; from Mr. Coburn, two; and from other sources, seven; and I have subsequently examined five or six more, besides reading the experience of Mr. A. C. Chapman, who has written at length on the plumage of the Scaup Duck (Zool. 1887, pp. 7–9). Of these twenty-six ducks inspected, fifteen were proved to be females by dissection, and the others were assumed to be females from their plumage. Seventeen of them have white faces, and of these, seven have besides sooty black heads faintly shot with green, but this green tinge does not approach in brilliancy the bottle-green head of a fully adult drake. Ducks in this dress are adult, but are not to be regarded as females assuming the male plumage. It is stated, however, by Mr. Macpherson that such cases sometimes occur ('Study of British Birds,' p. 72), and he has had good opportunities of investigating the different phases of plumage in the Scaup. In fully adult female birds the depth of colour of the head, and the purity of the white of the face, vary a little, the two finest I have seen being one from

Leadenhall, and one of Mr. Coburn's, killed in Ireland lately. Mr. Macpherson has one very remarkable Scaup Duck, a female by his own dissection, shot April 28th, 1888, with the greyest back of any female Scaup I have seen, and a black face instead of a white one, which I think must certainly be an instance of a female assuming male plumage, and such he also considers it, but the ovary was not diseased. Its cheeks, however, and the side of the neck, are as brown as those of any female Scaup, and the breast is a mixture of brown and black. Mr. Chapman, however, tells me that in his opinion the old female Scaups almost lose the white face every summer, adding that he has frequently seen in a private garden near Newcastle, an old female Scaup at midsummer, with a sooty black head and only a trace of the white face remaining. A female Scaup, shot in Sweden by Mr. J. P. Johnson on July 2nd, as he tells me, has a light-coloured face of a brownish or dirty white tint, which bears out Mr. Chapman's observation. It does seem that there is a good deal more yet to be learnt about the plumage of our common ducks than is to be found in books; and it is further complicated by the fact that females of some of them occasionally assume the male plumage.—J. H. GURNEY (Keswick Hall, Norwich).

Hybrid Sparrows.—When commenting upon a hybrid Tree and House Sparrow, forwarded for inspection by Mr. Tuck (p. 112), I observed that I did not remember more than one reported case of such a hybrid occurring in a *wild state*, and referred to the one mentioned by M. Suchetet as having been taken in France in December, 1868. I had overlooked the two other cases recorded by Mr. Macpherson in his 'Fauna of Lakeland.' He states (at p. lxxx of his Introduction) that he had, on two different occasions, seen wild birds which presented all the appearance of having been bred from a male Tree Sparrow and female House Sparrow, and of these he has given full particulars. The second of these examples was obtained at Aiglegill, so recently as the spring of 1892. It follows, therefore, that Mr. Tuck's specimen is not the first of the kind which has been procured in a wild state in England.—J. E. HARTING.

REPTILIA.

Palmated Newt in Worcestershire and Shropshire.—During the height of the present breeding-season (middle of March), I have found this species particularly abundant in the many small pools and water-holes of the Wyre Forest. They are common on both sides of the Dowles Brook, which runs through the forest, forming the boundary line between Worcestershire and Shropshire. Newts in general are known as "asgulls" in this locality. To the best of my knowledge this species has not been recorded before for either of these two counties.—J. S. ELLIOTT (Dixons Green, Dudley).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 15th, 1894.—Prof. STEWART, President, in the chair.

Mr. A. Whyte was elected a Fellow of the Society.

Dr. Maxwell Masters exhibited a remarkably good specimen of *Peziza tuberosa* on roots of Anemone. It is only comparatively recently that the hard lumps (sclerotia) in the soil of anemone-beds have been definitely associated with the fruit of this *Peziza*; at one time the sclerotia were regarded as diseased masses of the root-stock. Dr. Masters also exhibited some root-galls on plum caused by *Cynips (Biorhiza) terminalis*. Mr. Cameron in his monograph on the *Cynipidæ*, published by the Ray Society, has noticed galls formed by this insect on the beech, pine, and vine, but not on the plum.

Mr. Digby Nicholl exhibited a singular variety of the Partridge, *Perdix cinerea*, which had been shot by Mr. A. Waugh, near Creswell, Northumberland, in September, 1893. In colour it resembled the Red Grouse, having the breast and flanks suffused with large patches of dark reddish brown, and the dorsal plumage very much darker than usual. Mr. Harting pointed out that this variety was described and figured by the late John Hancock, in his 'Catalogue of the Birds of Northumberland,' where it had been met with more than twenty years ago, and in this county he himself had also procured a specimen at Corbridge-on-Tyne, which was preserved in the collection of varieties formed by the late Mr. F. Bond.

Mr. Norman Douglass exhibited a black variety of the Water Vole, *Arvicola amphibius*, captured at Banchory, Kincardineshire, remarking that this variety, which was at one time considered to be restricted to Scotland, had been met with in several English counties (Zool. 1892, pp. 281—293), and was well established in the fen country of Norfolk and Cambridgeshire.

Mr. George Brebner read a paper on the "Origin of the filamentous thallus of *Dumontia filiformis*," in which, by the aid of the oxyhydrogen lantern, he demonstrated—(1), that *D. filiformis* has a creeping basal thallus by which it adheres to the substratum; (2), that the creeping thallus is perennial, and when epiphytic is attached to its host by plugs of tissue which cause marked disintegration of the cells of the host; (3), that the ordinary filiform thallus owes its origin to the intercalary transverse septation of the articulations of certain branches of the creeping thallus. The group of active filaments may be endogenous or exogenous, and the order in which the rows of cells become specialized is generally centrifugal; (4), these specialized outgrowths emerge from the creeping thallus—remaining attached to it by the basal portion—and by the subsequent growth and division of the constituent filaments give rise to the annual well-known

D. filiformis thallus. The paper, which was listened to with great interest, was criticized by Dr. D. N. Scott, Mr. George Murray, and others.

On behalf of Mr. D. J. Scourfield, a paper was communicated by Prof. Miall on "Entomotraca and the surface-film of water." Briefly summarised, the principal views advanced in this paper were the following:— (1). To many Entomotraca, the surface-film of water is a very dangerous element in their environment. To this category belong large numbers of the Cladocera and Ostracoda. (2). To some others, on the other hand, the surface-film affords peculiar advantages. This class includes, so far as yet known, only a few specially modified Cladocera and Ostracoda, and some Copepods, which do not, however, present any apparent structural modifications. (3). In all cases (except where some Copepods possibly make use of the properties of the surface-film to attach themselves to aquatic plants above the general water-level) the relation to the surface-film, whether beneficial or the reverse, depends fundamentally upon the same physical principles,—namely, the upward pull of the surface-film when forming a capillary depression,—and the possession by the animals of water-repellent shells, ridges, scales, or setæ, capable of penetrating the surface-film, and producing capillary depressions.

March 15th.—Prof. STEWART, President, in the chair.

Mr. A. G. Tansley was admitted, and Messrs. J. H. Barkill and J. C. Lisbon were elected Fellows, and Mr. Thomas Hick was elected an Associate of the Society.

Mr. Clement Reid exhibited some cones of Scotch fir, and also some carbonised pine-wood from a peat-moss at Parkstone, Dorset. He said the pine had become extinct in the South of England after Neolithic times, and had been reintroduced only recently. Its extinction was commonly supposed to be due to forest fires. He found that every piece of pine-wood imbedded in the peat-moss was similarly charred, while portions imbedded in sand were little altered, and he suggested that the appearance of burning might possibly be due to the action of the growing peat, and have nothing to do with fire. A discussion followed, in which Messrs. Carruthers, Hanbury, Christy, and others gave reasons for adhering to the older theory.

Mr. Carruthers exhibited a diagrammatic table, showing an accurate counting of the annual rings of growth in three gigantic specimens of *Wellingtonia*, *Sequoia gigantea*, from which he calculated the age of the trees. A section of one in the British Museum (Natural History), 15 feet in diameter, which was a living tree when cut down, he estimated to be 1330 years old. As illustrative of the size to which these trees grow, he mentioned that he had measured two in America, one of which was 92 feet and the other 77 feet in circumference. A discussion followed on the conditions which accelerated or retarded growth; and Mr. G. Murray, in reply to a suggestion of Mr. Reid, pointed out that a number of experiments

had been made on various trees to test their rate of growth under different conditions of weather and temperature, but that the results varied to such an extent as to afford no basis for sound conclusions.

Mr. A. B. Rendle exhibited the fruit of *Melocanna bambusoides* from the Mauritius, where it had been introduced, and gave some account of its structure and mode of growth, referring to the figure of it given by Roxburgh, in his 'Plants of the Coast of Coromandel' (pl. 243), under the name *Bambusa baccifera*.

Mr. C. B. Clarke gave the substance of a paper "On certain authentic *Cyperaceæ* of Linnæus," describing the results of his examination of the type specimens in the Linnean Herbarium, with suggestions for some rectifications in the nomenclature. Referring incidentally to the history of this Herbarium, he regretted the additions which had been made to it since the death of Linnæus, and the introduction of plants which Linnæus had never seen. In the discussion which followed, Mr. Carruthers and Mr. Daydon Jackson explained under what circumstances these additions had been made, and showed that it was antecedent to the collection coming into the possession of the Society, since which time no alteration in its condition had taken place.

Mr. George Brebner read a paper "On the development of the mucilage-canals of the *Marattiaceæ*," in which, with the aid of some excellent lantern-slides, he showed that these canals are schizogenous intercellular spaces arising from the separation of cells, and are lined by a persistent epithelium. The secretion is thus the product of the activity of the living cells, and not the result of cell-degradation. An interesting discussion followed, in which Dr. D. H. Scott, Prof. Reynolds Green, and others took part.

ZOOLOGICAL SOCIETY OF LONDON.

Feb. 29th.—Prof. G. B. HOWES, F.Z.S., in the chair.

A report was read, drawn up by Mr. A. Thomson, the Society's Head-Keeper, on the insects bred in the Insect House during the season of 1893. Examples of 17 species of Bombyces, 29 of Diurnal Lepidoptera, and 24 of Nocturnal Lepidoptera had been exhibited during the past season, of which many had not been shown in former years. Amongst these were specimens of the fine insect *Actias mimosæ*, from S.E. Africa, hatched from cocoons by the Rev. H. A. Junod.

Mr. Oldfield Thomas called attention to the skin of a Giraffe from Somaliland, sent for exhibition by Mr. Rowland Ward, and pointed out its difference from the South-African Giraffe.

A communication was read from Dr. R. W. Shufeldt, giving particulars of the methods used in preparing specimens of certain Invertebrates for public exhibition employed in the U.S. National Museum.

Mr. Sowerby read a communication forwarded to him by Dr. O. F. von Moellendorff, giving an account of a collection of Land-Shells from the Samui Islands, Gulf of Siam. These land-shells were referred to thirty-three species, of which many were described as new to science.

A communication from Dr. D. Sharp contained a list of the Hemiptera Heteroptera of the families *Anthocoridae* and *Ceratocombidae*, collected by Mr. H. H. Smith in the island of St. Vincent, with descriptions of new genera and species, prepared by Prof. P. R. Uhler, upon specimens submitted to him by the West-Indian Committee.

Mr. O. Thomas read the third of his contributions towards our knowledge of the mammals of Nyasaland, based, like the two former, on specimens forwarded to the British Museum by Mr. H. H. Johnston, C.B., H.B.M. Commissioner in British Central Africa. The present paper contained remarks on thirty-five mammals, of which two were described as new, and were named respectively *Lepus whytei* and *Procavia johnstoni*.

A communication from Dr. R. W. Shufeldt gave an account of the conclusions to which he had arrived respecting the affinities of the birds of the order Steganopodes.

ENTOMOLOGICAL SOCIETY OF LONDON.

Feb. 28th, 1894. — Colonel CHARLES SWINHOE, M.A., F.L.S., Vice-President, in the chair.

Professor August Forel, M.D., of the University of Zürich, was elected an Honorary Fellow of the Society, to fill the vacancy caused by the death of the late Professor H. A. Hagen, M.D.

Mr. John Pratt, of the Cedars, New Barnet, and Mr. Michael Yeatman Woolf, of 1, Marlborough Place, St. John's Wood, N.W., were elected Fellows of the Society.

Mr. G. C. Champion called attention to a supposed new Longicorn beetle, described and figured by Herr A. F. Nonfried, of Rakonitz, Bohemia, under the name of *Callipogon friedländeri*, in the Berl. Ent. Zeitschr. 1892, p. 22. He said that the supposed characters of the insect were due to the fact that the head had been gummed on upside down! He also exhibited an extensive collection of Coleoptera and Hemiptera-Heteroptera made by himself in the island of Corsica in May and June last.

The Rev. Theodore Wood exhibited a variety of *Saturnia carpini*, with semi-transparent wings, a large proportion of the scales being apparently absent, bred with several examples of the type-form at Baldock, Herts; also a pale variety of *Smerinthus populi*, which was said to have been bred, with several similar specimens, from larvæ marked with rows of red spots on both sides.

Mr. R. South exhibited a variety of *Argynnis aglaia*, approaching the form known as var. *charlotta*, and a variety of *Euchelia jacobæ*, in which

the crimson costal streak was continued along the outer margin almost to the inner margin, taken by Mr. Fowler at Ringwood, Hants, in 1893; a variety of *Argynnis euphrosyne*, taken by Mr. Mead in Epping Forest in 1893; and a series of black and other forms of *Phigalia pendaria*, bred during the present year from a black female captured last spring by Mr. Rose, of Barnsley.

Mr. H. Goss exhibited, for Mr. C. B. Taylor, of Jamaica, a beautifully coloured drawing of the larva of *Papilio homerus*, Fab.

Mr. F. W. Frohawk exhibited drawings showing the complete life-history of *Argynnis aglaia* and *A. adippe*, every stage being figured; also enlarged drawings of the segments of the larvæ in their first and last stages, showing the remarkable difference in structure. Mr. Merrifield commented on the excellence of the drawings.

Mr. G. C. Champion read a paper entitled "On the *Tenebrionidæ* collected in Australia and Tasmania by Mr. J. J. Walker, R.N., during the voyage of H.M. Ship 'Penguin,' with descriptions of new genera and species"; and he exhibited the specimens comprised in the collection. Mr. J. J. Walker and Colonel Swinhoe made some remarks on the paper.

Mr. Champion also read a paper entitled "An Entomological Excursion to Corsica," in which he described an expedition to the mountains of that island in May and June, 1893, in company with Mr. R. S. Standen, Mr. A. H. Jones, Colonel Yerbury, R.A., Mr. Lemann, Mr. Raine, and others. Mr. Osbert Salvin, Colonel Yerbury, and Colonel Swinhoe took part in the discussion which ensued.

Mr. Edward Saunders communicated a paper entitled "A List of Hemiptera-Heteroptera collected by Mr. Champion in Corsica, with a description of one new species."

Mr. W. F. Kirby read a paper entitled "Notes on *Dorydium westwoodi*, Buchanan White, with observations on the use of the name *Dorydium*."

Mr. Charles B. Taylor communicated a paper entitled "Description of the larva and pupa of *Papilio homerus*, Fab."—H. Goss, *Hon. Secretary*.

March 14th. — Colonel CHARLES SWINHOE, M.A., F.L.S., Vice-President, in the chair.

Mr. William Bateson, M.A., Fellow of St. John's College, Cambridge; Mr. H. Caracciolo, of the Port of Spain, Trinidad; Mr. G. C. Dudgeon, of 53, Montague Square, W.; and the Rev. Frank E. Lowe, M.A., of St. Stephen's Vicarage, Guernsey, were elected Fellows of the Society.

Dr. D. Sharp exhibited a collection of White Ants (*Termites*), formed by Mr. G. D. Haviland in Singapore, which comprised about ten or twelve species, of most of which the various forms were obtained. He said that Professor Grassi had recently made observations on the European species, and had brought to light some important particulars; and also that, in the

discussion that had recently been carried on between Mr. Herbert Spencer and Professor Weismann, the former had stated that in his opinion the different forms of social insects were produced by nutrition. Professor Grassi's observations showed this view to be correct, and the specimens now exhibited confirmed one of the most important points in his observations. Dr. Sharp also stated that Mr. Haviland found in one nest eleven neoteinic queens,—that is to say, individuals having the appearance of the queen in some respects, while in others they are still immature; these neoteinic queens were accompanied by kings in a corresponding state.

Mr. Haviland gave an account of the structure of some of the nests, and of the cells of the females, and stated that two of the species of White Ants exhibited certainly grow fungus for their use, as described by Mr. Smeathman, many years ago, in the 'Philosophical Transactions.' Mr. H. Goss remarked that the fact that the different forms of social insects were produced by nutrition was known to Virgil, who referred to it, and to the subject of Parthenogenesis in Bees, in the 'Georgics,' Book iv. Mr. McLachlan, Colonel Swinhoe, Mr. Champion, Mr. Jenner Weir, and Dr. Sharp continued the discussion.

Mr. O. E. Janson exhibited specimens of *Dicranoccephalus adamsi*, Pascoe, from Sze-chuen, Western China, and *D. dabryi*, Auz., recently received from the neighbourhood of Moupin, in the same district; he observed that, although the latter had been quoted by Lucas, Bates, and others, as a synonym of *adamsi*, the two species were perfectly distinct; the females of both were unknown to the authors when describing them, and presented a remarkable difference, for whilst in *dabryi* this sex is similar to the male in colour and sculpture, in *adamsi* it is entirely dull black, with the upper surface minutely and densely punctate.

Mr. C. O. Waterhouse exhibited, for Mr. E. A. Waterhouse, a specimen of *Colias edusa*, closely resembling *C. erate*, a Continental species, which was taken on Wimbledon Common; a varied series of *Chrysophanus phlæas*, from Barnes Common; and a series of *Lycæna arion*, from Cornwall.

The Rev. Canon Fowler read a paper entitled "Some new species of *Membracidae*."

Mr. F. Merrifield read a paper entitled "Temperature experiments in 1893, on several species of *Vanessa* and other *Lepidoptera*." He said that the results tended to confirm Dr. Dixey's conclusions as to the origin of the wing-markings in the *Nymphalidæ*, brought out many, presumably, ancestral features, and in some cases were very striking. There was much difference in sensitiveness between the seasonal broods of the same species, even in *V. c-album*, although both broods of that species passed the pupal state in the warmer part of the year.

Dr. F. A. Dixey read a supplementary paper "On Mr. Merrifield's experiments in temperature-variation as bearing on theories of heredity."
—H. GOSS & W. W. FOWLER, *Hon. Secretaries*.

THE ZOOLOGIST

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A NATURALIST'S VISIT TO THE CALF OF MAN.

By P. RALFE.

THE southern extremity of Man, with the adjoining rocky islet, has long been well known as a sea-bird station, and has acquired a classic celebrity as the early recognised breeding-place of *Puffinus anglorum*, which received thence its trivial English name. Sir Wm. Jardine's 'British Birds' contain many allusions to bird-colonies as they existed there half-a-century ago. I have many times visited this locality, but in the summer of 1892 was able to explore its recesses more fully than ever before, although less completely than I could have wished. The long mountain range which forms the main portion of the Isle of Man ends at the south in a small stretch of low land, on which stands the town of Castletown, and which crosses the isle, here reduced to a mile in breadth, from Port St. Mary to Port Erin. Beyond this level strip rises another mass of rugged though comparatively low upland, of an oblong shape, about two miles by one mile and a half, partly cultivated and partly covered with heath, on which stands, with the bare moor rising behind its cottages, and bearing near its summit (430 feet above sea-level) a beautiful and perfect pre-historic stone-circle, the old-world village of Cregneish. This piece of upland, which forms the south-western extremity of Man, is called—or at least its highest point is called—the Mull (variously spelled, but locally pronounced "Myool"). Its coast, precipitous all round, comprises the highest sheer cliffs of Man. Beyond this is a rocky strait, 300 yards wide, and across it another rugged isolated hill, the so-called Calf of Man.

"The Calf" is 616 acres in extent, irregularly triangular, and generally pretty compact in shape, though broken at its southern side. An isolated Stack stands at the south, and another at the west. The greatest height of the islet, near its western end, is 421 feet. On the north its coast has no cliffs, and on the east the only high point is the "Kione Rouayrt," but the rest of its circuit shows a fine face of precipice, rising almost to its summit. Near the edge of the high western cliff are two lighthouses, which formerly showed the position of the Chickens reef, a little to the south-west, but which have been disused since the erection of a lighthouse upon the rock itself. Further inland is a farmhouse, and a part of the Calf, chiefly in its neighbourhood, towards the centre of the islet, is cultivated.

It was on June 9th that my visit was made. The weather was beautiful; a soft haze rested on the calm sea and obscured the distant view. It was about two o'clock in the afternoon, when, having procured a boat through the kindness of a Port St. Mary friend, our party set out from that picturesque little haven. Leaving the land-locked harbour, and the houses clustered closely under their sheltering hill, we rowed round the low outstretching shelves of limestone, curiously formed and rich in fossils, which separate Port St. Mary from the creek of Perwick—one of the many Norse names which recall the days of Viking settlement. Round the point, the low coast gives place to the bold broken cliffs of slate rock which form the usual Manx sea-margin. On the west side of Perwick these are not yet lofty, but steep and picturesquely caverned, and round their edges runs a strip of lovely greensward which, a month before our visit, was pale with the crowding blooms of the vernal squill, *Scilla verna*, which grows so thickly as to give the cliff-margin the prevailing tint. This is a favourite haunt of the Wheatear, *Saxicola oenanthe*, and just outside is one of the "Shag Rocks" of the island, on this day untenanted, for these birds in their breeding-season more or less forsake their ordinary roosting-places. Crossing the opening of Perwick, we heard the note of the Oystercatcher, *Hæmatopus ostralegus*, and saw a party of some seven or eight of these birds scudding along by the white-shingled strand of one of its inner creeks. They probably breed somewhere in this district sparingly, as they do more numerously on our sandy northern coasts. Until past Perwick we had seen nothing of rock-birds, but on

reaching, at its further side, the high point called "Kione-y-Ghoggan," Razorbills, *Alca torda*, began to pass and repass as the coast rose into a series of shelves far above the sea, the grey of the schist-rock, sometimes so dark here, weathered almost into whiteness. We noted, to our surprise, a pair of Common Sandpipers, *Tringoides hypoleucus*, running at the weedy foot of these great rock-walls, a situation which seems at variance with the usual habits of this species, but which I have several times observed in other parts of the island. Beyond "Kione-y-Ghoggan" is a wild recess where the cliff ledges (not, as on the outside, bare even of a blade of grass) are thick with a rich vegetation, the light glaucous hue of the sea-campion, the glossy green of sorrel, and the flowering beds of samphire, *Crithmum maritimum*, varying the rock surface. In the centre of the recess lies the block called "The Anvil," and the further cliff is pierced by the cave so well known to tourists as "The Hall," the other end of which enters into the Bay of Stacka. Opposite its opening is the huge pyramidal stack, the "Sugar-loaf," from which the bay derives its name, and both on this and the adjacent mainland, are shelves which hold a considerable number of Guillemots and Razorbills. *Larus argentatus* also breeds abundantly in the recess at the "Anvil," and on the "screes" of the Stacka Bay, where the cliff-face is encumbered with vast masses of fallen stones and debris. At the summit is the show place called the "Chasms," the slipping of the cliff-side having caused deep rents in the hill above, but the precipitous shore beneath is infinitely grander than these narrow crevices. The whole surface here is a waste, and covered with ling, *Calluna vulgaris*, rising to one of the highest points of the Mull, the "Cronk-ny-Arrey" (or as the people of the neighbourhood, with a strange mixture of Manx and English, say, "Cronk Watch"), one of the many watch-hills of the anciently warlike islanders.

Leaving the "Sugar-loaf," we proceeded to the somewhat less-known cliffs on the further side of Stacka Bay. These reach their greatest height in "Spanish Head," a fine perpendicular precipice, the name of which is often connected with the wreck of some ship or ships of the Spanish Armada. The association seems to be groundless,* but the sheer and massive precipice,

* See Rev. T. Talbot, in 'Transactions of Isle of Man Nat. Hist. &c. Soc.,' vol. i., p. 109 & seq.

rising from a deep clear sea, is probably the grandest in the Isle of Man. Hitherto we had seen Guillemots and Razorbills, but the more local Puffin, *Fratercula arctica*, now began to appear, and we noticed the first nesting-place of these birds among the rock *debris* on the eastern side of the Head. Both water and air were now alive with birds; Puffins, Guillemots, and Razorbills sped down from the rocks, and swam and dived around our boat, while young Shags, *Phalacrocorax cristatus*, brown, ugly, and stupid, sat ranged just above the water-mark. The number of Shags, however, which we saw on this day was not very great. A little to the west of "Spanish Head," a bit of broken ground high up, is another breeding-place of the Puffin, where, though too far off to be seen to advantage from the sea-level, we watched the crowds of birds streaming to the water. From "Spanish Head" we crossed the Sound towards "the Calf," which was a matter of no difficulty, the tide being in our favour and the water smooth. We kept southward at a little distance from the east coast of the islet. Passing the "Kione Rouayrt," we observed the same crowd of rock-birds, and noted the sharply-cut inlet called the "Ghaw Yiarn," or Iron Creek. Before us now, with a strip of lower coast extending towards it, was the southern horn of "the Calf," with the perforated stack called the Burrow at its extremity. Just opposite, the uncultivated land was richly cushioned with blooming sea-pink, *Statice armeria*. Rounding the Burrow, and crossing the mouth of a rocky inlet, we passed the "Caigher," another projecting point, and rowed underneath the western coast of "the Calf," the fine line of cliffs already spoken of. Here the Razorbills and Guillemots appeared again, and up on the cliff-top we saw some birds flying, which were probably Choughs, *Pyrrhocorax graculus*. These birds are still not uncommon on the opposite mainland, and I have watched them walking on the turf near "the Chasms," or perching on the craggy sides of an old stone quarry near the shores of the Sound. Off this side of the Calf is the "Stack," consisting really of two connected pieces of crag, though when seen from the north side, where it is visible for a great distance, it looks like a single pyramid, or even a ship passing the end of the Calf. It is perhaps 100 feet in height. Here we landed, and easily ascended the rock, but its landward side is very precipitous, and as we climbed upwards, we scattered numbers of rock-birds off the ledges. Young gulls, *Larus argen-*

tatus, were hiding, motionless, on the bare stony surface, which was strewn with long trailing sprays of the sea-beet, *Beta maritima*.

From the Stack northward the whole west coast of the Calf was one great colony of Herring Gulls, the most extensive I have met with. The cliffs here are less precipitous than under the lighthouses, and the steep slopes of stony rubble, mixed with grassy ledges and green sloping brows, are such ground as this gull loves. Low down we saw Puffins coming out from the broken ground near the bottom; and here we went ashore, there being no difficulty in landing anywhere on so calm a day. Among the stones there was a rank growth of sea-campion and other plants, and the surface was strewn with nests of the Herring Gull, mostly empty, though one contained two eggs. Broken egg-shells of the Puffin were lying around. In our hurried inspection, we saw in one hole among the stones an egg, and in another a bird. Owing to these burrows being under and among great fragments of rock, they were in many instances quite impregnable.

We drew the boat off, and, resting to lunch, looked up at the vast brows, whose luxuriant upper ledges were blue with masses of hyacinths, and here and there, in some sheltered spot, a streak of pale yellow showed where the primroses grew plentifully in the rich mould, the whole range being reflected softly in the glassy water at its base. When we rowed on into the Sound, completing our circumnavigation of "the Calf," the tide had turned, and our Port St. Mary friend, a knowing pilot, told us to take in our oars. Then, on a blue and golden sea, borne by a swift though smooth tide, we drifted, as it were to some enchanted land, accompanied by the fairy forms of the white sea-gulls. Flocks of these birds rested on the water, and we noted that some of them would drift, like ourselves, with the tide, and then fly up and return to the spot from whence they started, to repeat the action as if for the mere pleasure of the voyage.

Throughout our return journey the tide still helped us, and, passing the mainland cliffs again, we reached Port St. Mary in time for the last train back to Douglas.

During the day's excursion we met with two colonies of the Lesser Black-backed Gull, *Larus fuscus*, and one of the Kittiwake, *L. tridactylus*. I need not indicate the particular sites of these, for although neither is rare as a British bird, and both are

protected by law in this island, it is only here, so far as I know, that *L. fuscus* breeds in any numbers, and the Kittiwake settlement is the only one I have seen or heard of in the island. The nesting-places of *L. fuscus* were two isolated rocks, and we saw no birds away from the immediate neighbourhood of these. The Kittiwakes occupy a cavernous situation beneath a high very steep cliff. As we rounded a corner, we heard their unfamiliar note breaking out amid the murmur of the Guillemots and the harsh, laughing cry of the larger Herring Gulls, and immediately afterwards saw a crowd of those beautiful dove-like birds in agitated flight, while others sat on the ledges above the cavernous recess up which the still deep water washed, the darkness of its great terminal cave contrasting strongly with the glow of the sunny sea-levels without. This small colony is divided into two parts, though these are very close together. We landed here on low and narrow weedy shelves at the foot of the precipitous wall, studded with the cups of that curious sea-weed, *Himanthalia lorea*, and one of our party climbed to several nests of the Kittiwakes, but all he reached were empty, while on others, a few feet above, the occupants still sat, refusing to be scared away.

I may add that neither on this, nor on any other occasion when I have been in this locality, did I see a single Black Guillemot, *Uria grylle*, although this species has been reported by other observers here, and breeds in limited numbers in other localities in the Isle of Man.

CONTRIBUTIONS TO AN AVIFAUNA OF BADEN.

BY G. NORMAN DOUGLASS.

It would be worth while to undertake the preparation of a new avifauna of Baden, if, as I believe to be the case, no attempt has been made since 1849 to revise Kettner's list, published in that year. In this list are enumerated some 318 species,—a number which Nüsslin has reproduced in his short general survey of 1883,—and, though some of them may be safely struck out, the balance might be restored by the addition of others he has omitted, such as the Yellow-browed Warbler, Red-breasted Flycatcher, and one or two still more "occasional stragglers." As

it stands, the list exceeds that of any other province of Germany; and this abundance of bird-life is due both to the varied character of the surface of the Grand Duchy, and to its geographical position in the centre of Europe, in proximity to the Alps, and on special lines of migration. The basin of the Lake of Constance is a meeting point for migratory aquatic fowl; numbers come in winter to its open waters from smaller continental lakes; some accidental visitors find their way along the Danube, or from the Adriatic, like the Pelican, Flamingo, or the Ibis, of which a recent specimen, now in my possession, was shot in 1886, though not in Baden territory. Most of the marine species—Gulls, Swans, Mergansers, Scoters, &c.—must follow the Rhine Valley, and among these is the Razorbill, shot by an English sportsman some years ago, and, to the best of my knowledge not previously recorded. The list also includes several peculiar alpine species, and others from still further south—immigrants by way of the Rhone, such as the flock of Bee-eaters that established itself for a short time on the sunny slopes of the Kaiserstuhl. Although the rarer migrants, notably raptorial, stand no better chance of surviving here than in England, and though the favourite haunts of others are diminishing every year, the country has special and permanent attractions for ornithologists, as the literature of this subject will prove; but whoever wishes to work it out thoroughly and up to date will have to consult not only Kettner and Walckner, the majority of whose dates are prior to 1835 (though the first-named published some interesting details much later), but also scattered notes in recent standard works and current journals, to say nothing of the inevitable correspondence. Perhaps some resident in Baden may be induced by these indications to take up the task, if only in order to keep the country up to the level of most other German states in this respect. I have avoided all references, and am confining myself to a few personal observations which terminate with the year 1889. The result is little more than a catalogue of the commoner birds to be met with in the neighbourhood of the capital; and for many of these—very many—I can find no entries, so that my only excuse in presenting such an incomplete list is that it may serve to give an idea of the general status of bird-life, as compared with England, and of the periodical scarcity and abundance of certain species, a subject that will acquire more biological value in proportion as

statistics accumulate. In the classification and nomenclature I have followed 'The Ibis' List of British Birds.

Turdus viscivorus is relatively uncommon, and *T. musicus* also, at least in winter, when numbers emigrate to warmer climates. It avoids the town more carefully than *merula*.—*T. iliacus* and *pilaris*. Both observed in the neighbourhood of Karlsruhe, the former scarcer.—*T. merula*. The proportion between Thrushes and Blackbirds in summer is about equal. In other portions of the continent and in parts of England I find *merula* preponderates: a younger form, it appears less delicate, diffident or particular as to site and construction of nest. It begins to sing sooner (I have heard it with the thermometer at freezing-point), and nests perhaps earlier, qualifications that may contribute to this ascendancy.—Mr. E. Barrington writes to say that he has noticed *T. torquatus* in the Black Forest, Kaiserstuhl near Freiburg, and Hohentwiel near Constance.

Pratincola rubetra. Near Riegel, on the Kaiserstuhl.

Ruticilla phœnicurus and *titys*. Both common, the latter apparently more so. They arrive about the time (March 15th to 25th) when Bluethroats are said to come in considerable numbers, and remain till the first week of October.

Erythacus rubecula is not so abundant or familiar as in England, and affects out-of-the-way places. Slightly on the increase.

Daulias lusciniæ. Numerous in and around Karlsruhe, where it breeds principally in the Grand Ducal "Schlosspark" and "Phasanengarten," and still commoner in the woods bordering the Rhine. My earliest date for hearing the song is April 2nd, and the latest June 13th. I am told a heavy fine is imposed on those who are found catching Nightingales, and that this is the cause of their abundance here, whilst in other parts of Germany they have become practically extinct. It sings occasionally, contrary to habit, from the branches of trees, about twenty to thirty feet from the ground.

Perhaps the commonest Warbler, though it has the gift of keeping out of sight, is *Sylvia cinerea*. It breeds late, I suspect in order to await the growth of vegetation, in which to conceal its nest.—I stumbled against a nest of *S. curruca* in a private garden of the town: it contained ten eggs, probably the product of two-hen birds. *Qy.* Could all the young have survived in the

limited space, and would one bird have been able to feed the whole brood? I have found this species also at Forchheim, in the Rhine woods.—Mr. E. Barrington tells me that he observed *S. orphea* in July, 1890, near Karlsruhe.—*S. atricapilla* and *hortensis* are found in the proportion of about five to three, the former still increasing; they generally arrive by the first week in April. The female Blackcap sometimes performs most extraordinary antics and contortions, more so than any other bird I know, and doubtless in order to entice an intruder away from her brood.—A nest of *S. nisoria*, of which I acquired an egg, was taken in May, 1887, in the "Hardwald," and not many hundred yards from the town.

Regulus cristatus. Wanders through the Hardwald in company with Creepers, Tits, and Nuthatches, but, like the Crested Tit, it never enters the town in winter, as the others do.—I have also noticed *R. ignicapillus* several times, and have seen a specimen of it, captured after a strong gale, in the centre of the town.

Phylloscopus rufus. Rarer than either *trochilus* or *sibilatrix*, the former of which used to be the commonest of the three. Now the balance is in favour of *sibilatrix*. Why?

Hypolais icterina. Throughout the Rhine woods. A nest obtained near Daxlanden was situated about eight feet from the ground, and lined with green grass. The delicate crushed-strawberry tint of the egg fades, unfortunately, very soon.

Acrocephalus streperus. Plentifully distributed over the Rhine plain, in suitable localities. Numbers build on the River Alb, near Karlsruhe, generally between two to five reeds; often in bushes, brambles, or rank vegetation, the nest almost touching the ground. An author praises the "providential" forethought of the following species, that forbids it to construct its nest too early; but this sort of instinct is hardly more than a habit, sometimes even at fault, as was seen in the spring of 1887, when, during a fortnight of fine weather, the Reed Warblers' nests on the Alb were built unusually early, and were all destroyed by a flood. I have never heard the song of this bird before the 1st of May. The local German expression "to scold like a 'Rohrspatz'" (*i. e.*, a Reed Sparrow) probably has reference to its notes.—Mr. E. Barrington writes that he has obtained a nest of *A. turdoides* on the same river.—*A. phragmitis* is rather scarcer than in England.

Accentor modularis. Relatively uncommon.

Cinclus aquaticus. Generally distributed along the mountain streams of the Schwarzwald. Two, that had apparently lost their bearings, were obtained at Karlsruhe.

Acredula caudata may be the commoner form.—I have only identified *A. rosea* for certain. It keeps to the tops of trees, occasionally visiting the town. Referring to the question of the height at which the nests are situated, the highest I have seen was some twenty-five feet up, the lowest actually touching the ground, on a bank among the roots of a tree.

Parus ater and *major* occur in about equal numbers. This genus would increase more in the neighbourhood of Karlsruhe, as the surroundings are favourable so far as food-supply and immunity from its usual enemies are concerned, but unfortunately the number of nesting-sites is limited.—*P. palustris* is also not rare; a nest I looked into at Eggenstein, about one foot from the ground, was composed of hare's fur, and the eggs were carefully concealed under old leaves, presumably for protection against weasels, &c.—*P. cæruleus* and *cristatus* occur at present in almost reversed proportions in the Hardwald, and I have elsewhere observed the identical phenomenon, *viz.*, numerous appearance of *cæruleus* coupled with a marked decrease of *cristatus*. I daresay the more errant, independent, and *fin-de-siècle* disposition of the former has something to do with the change.

Sitta cæsia is similarly increasing, and not only near Karlsruhe. During the breeding season it retires to nesting quarters, mostly on the summit of old oaks, and its erratic notes are not heard for some time. One nest I observed occupied an old Woodpecker-hole in a pine tree, and was formed exclusively of thin transparent strips of pine bark, which must have taken very long to collect. On another occasion the chosen hole, being of inconvenient size, was plastered up: this proceeding attracted the attention of a pair of Great Tits, who were so pleased with the alteration, that they forcibly entered into possession as soon as it was completed. The diet of the Nuthatch is almost omnivorous, and largely sought on the ground, as can be seen in winter, when the smallest snowfall—but never frost alone—is sufficient to drive it to one's windows. In the case of one Nuthatch I shot, the upper mandible of the beak, instead of fitting on to the lower one, diverged at an angle: many analogous malformations have

been recorded, and a Starling in my collection has the upper mandible curved upwards, so as to be entirely useless. Unless these birds were fed by others, it is a marvel how they could survive with such imperfections.

Troglodytes parvulus. Somewhat rarer than in England. Schlosspark.

Motacilla alba. The commonest of its genus near Karlsruhe. It nests in huts on the "Exercierplatz," and in the cabins of the baths at Maxau on the Rhine, and uses feathers as lining, whereas *lugubris* prefers hair.—*M. melanope*. On all streams on the hills, and quite close to Karlsruhe (Hohenwettersbach, &c.).

M. flava. Not rare. Nests along the Alb.

Anthus pratensis and *trivialis* are both scarce in comparison to England.

Oriolus galbula. Hardwald, and still commoner in the Rhine woods. I have never heard its melodious song before the beginning of May.

Lanius excubitor. Observed at all seasons of the year in the plains of Baden and the Bavarian Palatinate, but difficult to approach. Some may have been *major*.—I came across a nest of *L. minor* along a path in the Hardwald, and quite close to the town. It was four feet from the ground, and contained five eggs.—*L. collurio*. Universally distributed, even in the centre of the Rhine woods. It is said to be good eating (?).—*L. pomeranus*. Once observed, and that just outside Baden territory (at Tuttlingen), but common enough, to judge by the number of stuffed specimens one sees everywhere.

Ampelis garrulus. Near Grötzingen; was shot in some numbers in the gardens of Karlsruhe, in winter, 1885.

Muscicapa grisola prefers the oak trees of the "Wildpark." In the Hardwald it is supplanted by *M. luctuosa*, which generally arrives a few days earlier, and is common both here and in the "Schlosspark." In June, 1886, the Pied Flycatcher was especially numerous, but forced by the perpetual rain to look on the ground for its food (*vide* 'The Zoologist' of that month): this consisted principally at that time of the battered remains of those annoying green caterpillars that dangle from the trees by invisible threads at the exact height of one's face. In 1889, for some unexplained reason, *luctuosa* was much rarer. This species frequently ousts the Crested Tits and other birds from their

accustomed nesting-places. — *M. albicollis*. Observed once or twice. An egg, taken in the Hardwald, in size 18×12.5 mm., of pale blue-green colour, was given me as belonging to this bird. — *M. parva*. Mr. E. Barrington tells me that he observed a pair at the Titisee, near Freiburg.

Hirundo rustica. Commoner in the villages. Generally arrives the first week in April, leaving during the second week of October (the 26th of that month is quite an unusual date), and seems more regular in its arrival and departure than in England, — probably on account of the less capricious climate, — as also in its nesting habits. The Sparrow, in its semi-domesticated condition, has become quite careless in the latter respect, and this irregularity appears to be reflected, so to speak, in the uncertain colour, shape, and size of its eggs, that depart from the typical standard of the Tree Sparrow (as do those of domestic and cage birds, fowls, canary, &c.). The Swallow, also, now and then builds at the last moment, — clearly a modern habit, and a pernicious one for any migratory bird that has considerations for its offspring.

Chelidon urbica. Abundant. — *Cotyle riparia*. Formerly nesting along the "Stadtgraben," where it issues from the town of Karlsruhe. Common in old quarries and cuttings in the neighbourhood, but especially so on the Kaiserstuhl, whose "Loess" supplies an ideal material for excavation.

Certhia familiaris. Scarcer in the Rhine woods than the Hardwald. I have twice seen it settling on the ground, and was most surprised once, while watching a *Tichodroma*, to recognize close by, my familiar friend the Creeper, indulging in an amateur performance on the rocky surface, as if in imitation.

Carduelis elegans. With the clearing of woods and marshes many species of birds become scarcer, but this is counterbalanced by a proportionate increase of others, like the Sparrow, various Finches and Buntings — mostly of the seed-eating kind — that profit by the change, and are rather attracted than repelled by towns and cultivated fields. The Goldfinch, though much sought after as a cage bird, is no exception, being decidedly commoner than it used to be in Baden and elsewhere. Nests at Palmbach and Grötzingen; abundant also on the Kaiserstuhl.

Chrysomitris spinus. Black Forest; not rare.

Serinus hortulanus. Spreading northward throughout Ger-

many, and has been observed near Karlsruhe since the year 1818. Nests in the gardens and immediate neighbourhood of the town : eggs pale green with orange spots.

Ligurinus chloris. Hardwald and elsewhere. Plentiful.

Coccothraustes vulgaris. Schlosspark, Hardwald and Rhine-woods. Shy, but considerably increasing in numbers. Large flocks in February, 1888.

Fringilla cœlebs. On the Kaiserstuhl I noticed a curious Chaffinch's nest, built against the upright stem of a walnut-tree. It was supported solely by a piece of detached bark, and adaptively ornamented on the outside, exactly resembling a round excrescence in the wood. Hedges being absent in the country, many nests are constructed in low bushes, not more than five feet from the ground, and externally formed of green moss.—*F. montifringilla*. Sometimes visits the streets of Karlsruhe in winter, but not often. The peasants of the Bavarian Palatinate kill numbers of Bramblings—locally called Bö-hämmer—in winter, when they are in excellent condition, by observing where the flocks settle down to roost, and shooting them by torch-light with blowpipes and small bullets of clay, one by one, as they sit huddled together in rows. As each bird drops, its neighbour dreamily steps into its place and falls in its turn. The sport continues till one bird, not sufficiently stunned, gives the alarm.

Pyrrhula europæa. Common, especially in Schlosspark.

Loxia curvirostra. Frequently observed. The tenacity of life of this species has often struck me as unusually great.

Emberiza miliaria. Rarer than *E. citrinella*, which is one of the commonest birds.—*E. schoeniclus*. Eggenstein, Daxlanden, and other places near Karlsruhe.

Sturnus vulgaris. Wildpark and elsewhere.

Nucifraga caryocatactes. The few I have seen in the Black Forest, probably residents, were remarkably tame. Others, arriving in winter, may belong to the slender-billed form.

Garrulus glandarius. Generally distributed, but occasionally conspicuous by its absence in districts which it otherwise frequents (periodical migration?). There is a good deal of local variation in the pitch and tone of its voice. It imitates other birds—the Buzzard, for instance—to perfection.

Pica rustica. Rarer than in England, and more so near Karlsruhe than in the Rhine woods,

Corvus monedula. Kaiserstuhl, Freiburg.—*C. corone*. In Baden the Crow has modified its nesting habits, perhaps for greater security, and often builds in the centre of the densest woods, instead of in its usual conspicuous look-out positions.

C. cornix. A winter visitor, remaining pretty late sometimes. *A propos* of the Siberian hybrids of this and the preceding species, Kettner wrote, in 1849: "*C. cornix* and *corone* form only one species. My collection contains numbers of transitional types. The variety called Hooded Crow is not nearly so common as the black Carrion Crow. In December, 1846, a specimen was shot near Baden with the grey parts of the Hooded Crow black, and the black parts grey."—*C. frugilegus*. In the fields round Karlsruhe, in winter.—*C. corax*. Observed at the Schurm See, and near the Wild See, in the Black Forest.

Alauda arvensis. Plentiful. Some remain throughout the winter.—*A. cristata*. Much rarer in 1887, as the rains of the previous season had probably destroyed many broods. Frequent in the town in winter.

Cypselus apus. Generally arrives April 25th to 30th; my earliest date is the 17th of that month. Nests in Karlsruhe, under the eaves of the New "Kunstschule," and on the Kaiserstuhl, in quarries, promiscuously with Sand Martins.

Caprimulgus europæus. Not uncommon in the Hardwald. I have also heard it high up in the Schwarzwald (Kniebis Pass).

Picus martius. In the Black Forest I have generally started this bird off the ground, where it seems to find more food than on the well-kept timber. I observed one in the Rittner-wald near Karlsruhe, and another one, quite close at hand, in the Wildpark; the latter was unfortunately shot by a gamekeeper.

Dendrocopus major. Common enough on pine trees, firs, and poplars. Nests in boxes nailed up for the use of Starlings, in the Hardwald.—*D. medius*. Schlosspark and elsewhere. Somewhat rarer, but more tame and sociable, than the preceding. By its knack of climbing up the thinnest branches of trees, it can be distinguished in any light from *D. major*.—*D. minor*. Observed in the Wildpark, and in gardens of the town. The females seem to preponderate numerically.

Gecinus viridis. Near Karlsruhe there is rather a deficiency of old trees, and ant-hills are few and far between; still there are generally one or two of these birds to be seen.—*G. canus*,

Commoner than might be supposed, principally near villages, in fields, orchards, and on the edge of beech woods, in company with Jays and Missel Thrushes.

Jynx torquilla. Abundant in Baden and the Bavarian Palatinate.

Alcedo ispida. Visits the lake of the Stadtgarten now and then, but generally leaves the same day. A pair breeds regularly on the Alb, on one or the other side of the Soldiers' bathing establishment, but the nests are seldom unmolested. They are very shy, and the young disappear from the district as soon as they can fly. Another pair haunts the "Bibersgrund" (Beavers' meadow), opposite Maxan, on the Rhine.

Upupa epops. Not rare in the plain on both sides of the Rhine. One pair comes every year to the Wildpark.

Cuculus canorus. Generally distributed. Occasionally lays in the nest of the Icterine Warbler.

Strix flammea. Observed once or twice; used to be frequent at Scheibenhard, near Karlsruhe.

Asio otus. Perhaps the commonest species. Hardwald, &c. The peasants imagine the hooting of Owls predicts rain, because they feel the approaching cold: a superstition like this is alluded to in an English nursery-rhyme.

Athene noctua. Also not rare.

Buteo vulgaris. Common, breeding in the Wildpark, but much persecuted. It is rather scarce in the Bavarian Palatinate.

Aquila clanga. I may record the capture of a specimen (as this has probably not been done) near Wiesloch, in the winter of 1887; it was afterwards sent to the Zoological Gardens of Karlsruhe.

Astur palumbarius. Observed several times, chiefly in autumn. An adult female was shot at Karlsruhe in 1886.

Accipiter nisus. More numerous than the Kestrel, at least near the capital, probably on account of its wariness and swift flight. It is seldom that these birds fly into one's hands, but such was the case with one, which was caught, while pursuing a Redstart, by a person in the street.

Milvus iclinus. Slightly rarer than the Buzzard.—*M. migrans*. A specimen from near Karlsruhe lived twenty-three years in confinement, and may be alive still.

Tinnunculus alaudarius.—I am told the country people, in

parts of the Black Forest, protect the Kestrel, and acknowledge its usefulness by allowing it to build on their houses.

Pandion haliaëtus. I noticed two pairs on the Rhine, between Schaffausen and Constance, in 1886.

Phalacrocorax carbo. Maxan; once observed.

Ardea cinerea. Occasionally visits the Stadtgarten lake, and the meadows at Gottesau, close by. There is a heronry near Oos; but I could form no estimate of the number of nests, for they were out of sight, on the summit of high firs. Another colony on the Neckar, I believe, was founded long ago by some emperor expressly for the purposes of falconry.*

Botaurus stellaris. A good number of this class of birds are still obtained, principally during the Snipe season. A migrating Bittern was caught—in 1886 I think—in an exhausted condition, in a stable not far from Karlsruhe.

Ciconia alba. Not so familiar as in some parts of the continent, though most villages possess one pair, the Storks arrive early, in the latter part of February, and lose no time in arranging and re-arranging the materials for their nests, the foundation of which is usually an old cart-wheel. I once noticed quite an unusual number of them (twenty-nine) collected together on some flooded meadows near Gottesau. One stork used to live in the streets of Karlsruhe, and was remarkably tame, till somebody took the liberty of painting his legs blue, since which time it has not been heard of.

Anas boschas. Large flocks of this and other species pass over the town in winter; I have not had an opportunity of seeing any of them at close quarters, but a glance at Kettner's list will show that the country has a surprising variety of visitors, natatory as well as grallatorial.

Columba palumbus and *C. ænas*. Both appear slightly on the increase.

Turtur communis. More plentiful in the Bavarian Palatinate.

Phasianus colchicus. In parts of the Hardwald and Rhine woods (Forchheim). The call-note differs a little from that of the English bird.

Perdix cinerea. Common in the plain.

Coturnix communis. In fields near Beiertheim.

Tetrao bonasia. Appears to be well-nigh extinct in most

* The truth of this supposition might be ascertained possibly by reference to the archives preserved at Heidelberg.—ED.

parts of the Schwarzwald, like the Blackcock already is. I saw a specimen shot not many years ago at Lautenbach.—*T. urogallus*. Pretty abundant in certain localities, as at Rippoldsau and Wildsee. The derivation of the German name "Auerhahn" seems puzzling. Many older authors call the bird "Ohrhahn," on account of its "red ears," but this may be popular etymology. Some, including Grimm, I think, derive the word from "Aue," signifying wood ("cock of the wood"); others think it is connected with an old affix "ur" (*cf.* "ur wald," &c.), meaning "great," and therefore referring to its size. When the ancient term "Der Ur" (Auerochs) became less familiar in proportion as the animal died out, the impression of it may have been revived by adding "ochs," and thus "Urochs" and "Urhahn" have been unconsciously brought together. Tschudi says the latter form was exclusively employed during the Middle Ages.

Crex pratensis. Occasionally heard on the hills.

Gallinula chloropus. Not rare on the lower parts of the Alb.

Fulica atra. Forchheim.

Glareola pratincola. I once observed this bird on the Alb, not far from Karlsruhe; it is popularly called "Himmelsziege" (Air-goat), in allusion to its peculiar notes and upward flight.

[This observation seems misapplied, and refers doubtless to the Common Snipe, the old name for which in England is "heather-bleater," bestowed upon it from the peculiar sound which it makes during the breeding season, while on the wing. If a bird is "popularly called" by any particular name, we are to infer that it is common enough to be popularly observed; but this does not seem to be the case with the Collared Pratincole in the district referred to.—ED.]

Vanellus vulgaris. At Eggenstein, and sometimes on the fields near Karlsruhe.

Gallinago caelestis. Both this and the Jack Snipe are not rare below Eggenstein.

Tringoides hypoleucus. On the Rhine, as well as along all the rivers of the Black Forest.

Sterna fluviatilis. The Common Tern and the Black-headed Gull are frequently to be seen near Maxan. Kettner enumerates twenty species of Gulls and Terns in his list.

Podiceps fluviatilis. Observed once or twice on the Lower Alb. All the Grebes are said to occur in this district.

A LIST OF BIRDS OBSERVED AT TOOTING-BECK COMMON, NEAR LONDON.

By F. W. FROHAWK.

HAVING resided in this neighbourhood during the last seven years, and kept an accurate account of the birds observed in the immediate vicinity by my brother and myself, I think the following list may be of interest, considering that the locality is but five miles from Charing Cross. The species followed by an *n* have been found nesting:—

- | | |
|-------------------------------------|--------------------------------|
| 1. Sparrow Hawk. | 32. Tree Pipit. <i>n</i> . |
| 2. Kestrel. | 33. Meadow Pipit. |
| 3. Barn Owl. <i>n</i> . | 34. Sky Lark. <i>n</i> . |
| 4. Red-backed Shrike. | 35. Yellow Bunting. |
| 5. Spotted Flycatcher. <i>n</i> . | 36. Chaffinch. <i>n</i> . |
| 6. Missel Thrush. <i>n</i> . | 37. Sparrow. <i>n</i> . |
| 7. Fieldfare. | 38. Hawfinch. |
| 8. Song Thrush. <i>n</i> . | 39. Greenfinch. <i>n</i> . |
| 9. Redwing. | 40. Goldfinch. |
| 10. Blackbird. <i>n</i> . | 41. Linnet. |
| 11. Hedgesparrow. <i>n</i> . | 42. Lesser Redpoll. |
| 12. Robin. <i>n</i> . | 43. Bullfinch. |
| 13. Redstart. <i>n</i> . | 44. Starling. <i>n</i> . |
| 14. Stonechat. <i>n</i> . | 45. Carrion Crow. <i>n</i> . |
| 15. Whinchat. <i>n</i> . | 46. Rook. <i>n</i> . |
| 16. Wheatear. | 47. Jackdaw. |
| 17. Sedge Warbler. | 48. Jay. |
| 18. Nightingale. <i>n</i> . | 49. Green Woodpecker. |
| 19. Blackcap. <i>n</i> . | 50. Lesser Spotted Woodpecker. |
| 20. Garden Warbler. <i>n</i> . | 51. Wryneck. <i>n</i> . [n.] |
| 21. Whitethroat. <i>n</i> . | 52. Tree Creeper. |
| 22. Lesser Whitethroat. <i>n</i> . | 53. Wren. <i>n</i> . |
| 23. Willow Warbler. <i>n</i> . | 54. Nuthatch. <i>n</i> . |
| 24. Chiffchaff. <i>n</i> . | 55. Cuckoo. <i>n</i> . |
| 25. Golden-crested Wren. <i>n</i> . | 56. Kingfisher. |
| 26. Great Tit. <i>n</i> . | 57. Swallow. <i>n</i> . |
| 27. Blue Tit. <i>n</i> . | 58. House Martin. <i>n</i> . |
| 28. Coal Tit. <i>n</i> . | 59. Sand Martin. April 4th, |
| 29. Marsh Tit. | 60. Swift. <i>n</i> . [1894.] |
| 30. Pied Wagtail. | 61. Nightjar. |
| 31. Yellow Wagtail. | 62. Woodpigeon. <i>n</i> . |

- | | |
|-----------------|--------------------------------|
| 63. Stock Dove. | 70. Herring Gull. |
| 64. Pheasant. | 71. Common Gull. |
| 65. Woodcock. | 72. Bar-tailed Godwit, and |
| 66. Water Rail. | 73. Curlew. March 25, 1894, |
| 67. Water Hen. | 11 p.m. |
| 68. Wild Duck. | 74. Wader, sp. not determined. |
| 69. Teal. | |

The Bar-tailed Godwit and Curlew I heard passing over, apparently a large flight from their cries, going north-east.

Every spring and autumn, during night-time, a bird is heard—probably some kind of wader—that utters continually a short note repeated four times in quick succession, greatly resembling in tone the note of a child's squeaking toy. From the direction of sound it apparently flies about in an aimless manner, and often appears to be circling round, especially on dark stormy nights. Once at midnight, while crossing the Common, I flushed one by a clump of furze; it rose quite near me, but I was unable to see it, for the night was very dark. It called immediately it rose, and from its notes appeared to take a zigzag line of flight.

What species it is I have as yet been unable to discover, although I have frequently made enquiries of my ornithological friends. It is certainly abundant during migration. I have heard the notes annually since 1877, in which year I first noticed them on a very stormy August night, during a thunderstorm, when the bird which uttered them was heard calling in all directions, and appeared to be flying wildly about.

[The description of the flight, and the short note, repeated three or four times, remind us of the Common Sandpiper, *Tringoides hypoleucus*, which would be a spring and autumn migrant in the neighbourhood referred to.—ED.]

WILD BIRDS PROTECTION ACT (1880) AMENDMENT.

THE following is the text of the Bill which has been re-introduced into Parliament during the present session by Sir Herbert Maxwell, Bart., M.P., and which has for its object the protection of eggs.

Memorandum.—The present Bill differs from a Bill on the same subject which the House of Commons passed through all

its stages last year in that certain amendments made therein in the House of Lords are incorporated as alternative to the original provisions. Under the Bill as it is now presented, County Councils are empowered to apply for an order—

- (1). For the prohibition of taking eggs within specified areas;
- (2). For the prohibition of taking the eggs of named species of birds;
- (3). For the addition of any bird, not included in the schedule of the original Act, to the said schedule.

A BILL TO AMEND THE WILD BIRDS PROTECTION ACT, 1880.

Whereas it is expedient to provide for the better protection of certain species of wild birds in the United Kingdom:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same as follows:

1. This Act may for all purposes be cited as the Wild Birds Protection Act, 1894, and shall be construed as one with the Wild Birds Protection Act, 1880 (hereinafter referred to as "the principal Act"), except as hereinafter provided.

2. A Secretary of State may, after the *passing of this Act*, upon application by the County Council of any administrative county by order prohibit—

- (1). The taking or destroying of wild birds' eggs in any year or years in any place or places within that county; or
- (2). The taking or destroying the eggs of any specified kind of wild birds within that county or parts thereof, as recommended by the said County Council and set forth in the said order.
- (3). The application by the County Council shall specify the limits of the place or places, or otherwise, the particular species of wild birds to which it is proposed that any prohibition in the order is to apply, and shall set forth the reasons on account of which the application is made.

3. A Secretary of State may, on the representation of the council of any administrative county, order that the principal Act shall apply within that county or any part or parts thereof to

any species of wild bird not included in the schedule of that Act, as if that species of wild bird were included in the schedule of that Act, and on the making of such order that Act shall apply accordingly.

4.—(1). The council of an administrative county shall in every year give public notice of any order under this Act which is in force in any place within their county during the three weeks preceding the commencement of the period of the year during which the order operates.

(2). Public notice under this section shall be given—(a). As regards each place in which an order operates, by advertising the order in two local newspapers circulating in or near that place; (b). By fixing notices of the order in conspicuous spots within and near each place in which the order operates; and (c). In such other manner as the Secretary of State may direct, or as the council may think expedient, with a view to making the order known to the public.

5. Any person who, after the *passing of this Act*, shall take or destroy, or incite any other person to take or destroy—(a) the eggs of any wild birds within any area specified in the order; or (b) the eggs of any species of wild bird named in the order, shall, on conviction before any two justices of the peace in England, Wales, or Ireland, or before the sheriff in Scotland, forfeit and pay for every egg so taken or destroyed a sum not exceeding *one pound*.

6. Any expenses incurred by the council of a county under this Act may be defrayed by that council as expenses for general county purposes within the meaning of the Local Government Act, 1888 (51 & 52 Vict. c. 41), or, so far as respects Scotland, the Local Government (Scotland) Act, 1889 (52 & 53 Vict. c. 50).

7.—(1). This Act shall apply to Scotland with the substitution of the Secretary for Scotland for a Secretary of State.

(2). This Act shall apply to Ireland, with the substitution of the Lord Lieutenant for a Secretary of State, and of the grand jury for the council of an administrative county, and any expenses incurred in carrying this Act into effect in Ireland shall be defrayed out of the grand jury cess.

Writing in 'The Times' of the 13th April last, Mr. T. Digby Pigott thus criticises the provisions of this Bill, and gives an abstract of the Dutch laws which affect the protection of wild birds' eggs:—

“By common consent it is desirable, if our rarer species of birds are to be saved from possible extinction, that their eggs should be protected. As to the manner in which such protection can best be secured doctors differ, and it is by a process of elimination that we are most likely to arrive at a satisfactory conclusion.

A general protection of all wild birds' eggs is admitted by every one to be out of the question, and, in the opinion, I think, of most who have given attention to the subject, the likeness of the eggs and breeding habits of many common and rare birds makes any discriminating law which would protect the eggs of certain species and leave those of others unprotected scarcely less impracticable.

A proposal made in an early stage of the agitation, that eggs might be legally collected if taken for food, but not for any other purpose, was disposed of by Bishop Wilberforce, who convinced the House of Lords that it would be unreasonable to compel 'a man of science' to prove his right to keep a treasured egg in his collection by eating it.

A later proposal is Lord Walsingham's, made last session, for the establishment of 'sanctuaries' where birdsnesting should be a crime within a charmed line, though legal outside. Excellently as such an arrangement may work in an undeveloped country—as applied, for instance, by Lord Onslow's Government to 'the Little Barrier' and another outlying island of New Zealand—it is scarcely, perhaps, so well suited to the conditions of life and property in crowded England. Squire A and Lord B, if they are sensible men, might not object to their adjoining properties being placed on different footings; but Tom Smith, with a cottage on this side of the brook, would find it a little difficult to appreciate the justice of a law under which his boy has to go before them as magistrates for taking a nest, while Bill Jones's boy, just over the bridge, strings eggs by the dozen without a word from the policeman.

I venture, with all deference to one of our highest authorities on matters connected with natural history, to think that a better remedy is to be found in another direction.

Our practical neighbours in Holland have had the same difficulty to face as ourselves, and have met it effectively by simple, and, as I have been assured, popular laws, based on the common-sense principle that—common law notwithstanding—a man has as much right to protect the eggs laid on his ground as he has to protect his gooseberries, and that any one taking the one or the other without his leave is equally worthy of punishment.

In case you should think them just now of sufficient interest to be worth publication, I enclose two translations, the one an extract from the Dutch Game Law, the other an Act now in force in Holland 'for the preservation of animals of service to agriculture and woods.'

Extract from the Dutch Game Law of June 13th, 1857:—

'Article 22.—It is forbidden to search for or to collect, to expose for sale, or to carry away the eggs of wild birds. This prohibition does not refer to the eggs of wild ducks, nor, during the months of February, March, and April, to the eggs of Divers, Waterhens, Snipe, Curlews, Sandpipers, and Plovers, or of Pewits, if the searching and collecting is undertaken in company of the proprietor or rightful owner, or with a written permit from the latter, to be shown on demand of any one of the officers appointed to carry out this law. The buying, exposing for sale, or removal of the eggs of Pewits is allowed up to and on May 5th.'

Dutch Law of the 25th of May, 1880, for the protection of species of animals useful for agriculture or woodcraft:—

'Article 1.—It is forbidden to catch, to kill, to remove, to offer for sale, to sell, to supply, or to possess for the purpose of delivery for sale mammals or birds living wild, which are useful for agriculture or woodcraft.

Article 2.—Of the birds referred to in Article 1 it is forbidden:—(1) To remove, destroy, carry away, offer for sale, sell, deliver, or keep in readiness for delivery the eggs. (2) To disturb or destroy the nests.

Article 3.—A list will be drawn up and issued showing what mammals and birds shall be considered, either for all time or for a section of the year, as being useful for agriculture or woodcraft. This list will be obtainable from our Commissioners in the provinces.

Article 4.—The Minister is empowered, on special occasions for a scientific purpose, to exempt certain persons from the penalties attached to infraction of one or more of the clauses of Articles 1 and 2.

Article 5.—The capture or slaughter of the animals referred to in this law, when they are found on isolated private property, such as gardens, crofts, or orchards, is permitted to the owner and employer of the ground, and can by them be made over to a third party. The same exception

applies to the removal, disturbance, or destruction of eggs. By isolated property is meant what is surrounded to the height of at least a mètre by a wall, hedge, screen, fence, or trellis, or surrounded to the breadth of at least two mètres by a ditch of a depth of at least 1 mètre 50 centimètres below the surface of the ground.

Article 6.—Except in the cases described in Articles 3, 4, and 5, all infractions of Articles 1 and 2 will be punished by a fine of from 50 cents to 20 guldens. The repetition of the offence within two years, or repeated cases, may be punished by a double *maximum* fine, or by imprisonment of at least one day and at most seven.

Article 7.—On each offence, the dead or captured animals, together with the eggs, and all objects by which the offence was committed, shall be seized. Living animals will be set at liberty. The dead animals and the eggs will be given to the officials to be destroyed.

Article 8.—The carrying out of this law is administered by the officers of the Royal or communal police, and by the officials of the Treasury."

NOTES AND QUERIES.

The late John Jenner Weir, F.L.S., F.Z.S., F.E.S. — It is with much regret that we have to notice the death of this ardent naturalist, in his seventy-second year, on the 23rd March last. Mr. Jenner Weir was born at Lewes in August, 1822. He early displayed a keen love for Natural History, and with his brother, Mr. Harrison Weir, kept a multitude of living creatures, at one time having no less than a hundred different species of vertebrates in captivity. The scientific spirit manifested itself in careful observation of their habits and in experimental breeding. In 1840, it would seem from his diary, that he had definitely turned his attention to Ornithology, but this was merely an indication of the growth of his love for Natural History generally, for in 1844 we find him "treading" the palings of the garden at Camberwell, whither his parents had removed from Lewes in 1831. In 1845 his first note was published; it appeared in 'The Zoologist,' and clearly shows the close and accurate observation and spirit of scientific enquiry which continued his habit throughout life. The note is on an entomological subject, and the few observations from his pen which are scattered throughout the volumes of 'The Zoologist' are indiscriminately entomological and ornithological. But while these were his chief hobbies, he took all nature for his province, and no branch of Natural History was without interest to him. He was a sparing writer, putting his observations into the most concise language and the fewest words; indeed he had a vast store of knowledge that the world would gladly

have shared, but which unfortunately he did not publish. In 1845 he was elected a member of the Entomological Society of London, and formed many friendships amongst the entomologists of the time, of whom but very few remain. It was not until 1869 that his first paper was contributed to the Society. He had worked assiduously for many years at the Micro-Lepidoptera, but in 1868 he undertook a series of experiments on the relation between insectivorous birds and the colour and edibility of Lepidoptera and their larvæ. This paper was the outcome of these experiments, and a second followed. With Darwin he was in regular correspondence, and frequent reference is made to these experiments in the 'Descent of Man' and other of Darwin's works. His later writings have appeared principally in 'The Entomologist,' the last of them being published in the number for April, which contained, alas! the announcement of his death. He became Vice-President and Treasurer of the Entomological Society, and Fellow of the Linnean, Zoological and Royal Horticultural Societies, and was a member of the South London Entomological Society from its commencement. He was an active member of the Finance Committee of the Zoological Society, and was on the Scientific and Narcissus Committees of the Royal Horticultural Society, where he was a regular attendee at the fortnightly exhibitions. His love of gardening found room to develop after his removal to Beckenham, and it was a pleasure to go round the shows with him, and hear of his plants, and how many of them had especial interest from their connection with different friends, or with places he had visited. At one time he and his friend Edward Newman used to spend their Saturday afternoons at the Zoological Gardens, the interest of such visits being perhaps all the greater from the fact that their opposite views on the Darwinian theory gave rise to frequent philosophical argument. Mr. Weir entered the Customs Service in 1839, and remained until 1885; in 1874 he became Accountant and Controller-General, having climbed from the bottom to the top of the tree; his promotion gave universal satisfaction in the Civil Service. He used to allude to his own life as an illustration of the advantage of persevering steadily at one thing in spite of all temporary hardships and discouragements. Always kindly and tolerant with young men, he was especially ready to help them in science, and thus he took great interest in the South London Entomological Society, of which he was for several years President or Vice-President, from time to time communicating various papers. The love of Nature was to him, he said, a passion; he thought deeply, and spoke of what he knew and loved; so that his conversation was an education and a delight. A wide circle of friends will mourn his loss.

MAMMALIA.

Habits of the Badger.—In neither the Editor's very interesting article on the Badger (*Zool.* 1888, p. 1) nor in Bell's 'British Quadrupeds,' do I find mention of a circumstance that came under my observation on the 9th April last. There are a good many badger-earths in Curraghmore, the demesne of the Marquis of Waterford, in my parish, and while examining one of these, a hole near the entrance of a very large burrow was pointed out to me by the head gamekeeper. This hole was partially filled with the excrement of the Badgers, and was evidently the place that was constantly used by them for the purpose. The whole surroundings of the burrow were perfectly clean. It is, I believe, well known that Badgers are very cleanly animals. An instance of this is given in the Editor's article (p. 7), and I think the circumstance I have mentioned confirms their character in this respect. Mr. Gordon, the gamekeeper, told me that he had often seen places of the kind near the entrance of badger-earths, but it was, I confess, a new experience to me.—WILLIAM W. FLEMING (Coolfin, Portlaw, Co. Waterford).

[Some years ago, when staying on a visit with Mr. Assheton Smith, at Vaynol, North Wales, where Badgers are not only plentiful, but are strictly protected, our attention was particularly directed to the trait above referred to, and during our rambles in the woods we had ocular demonstration of the truth of it. We remember, too, the amusement of our host on our remarking that it was evident the Badger was the original inventor of the "earth-closet," though modern patentees had sought to deprive him of the credit which properly belonged to him.—ED.]

The Badger: its period of gestation.—On April 7th, 1893, a female Badger was trapped at the mouth of its "earth" in Isell Woods, and after having been kept in close confinement for twelve months she gave birth, during the first week of April, 1894, to two young ones. Is not this an unusual occurrence, for no other Badger is known to have had access to her during her captivity?—J. R. DENWOOD (Kirkgate, Cockermonth).

[The average period of gestation in the Badger is believed to be about twelve months, but instances are on record in which these animals have produced young after being in confinement for thirteen and even fifteen months. A good deal of evidence on the subject will be found in 'The Zoologist' for 1888, pp. 12, 13.—ED.]

Black Rats on Ships in Port.—The man from whom the Black Rats were obtained is a professional ratcatcher. He lives at Birkenhead, near Liverpool, and makes his living by catching rats on the large rice and grain ships when they are in port. Those lately taken were caught on the s.s. 'Clan Ronald' while she was lying in a dock at Birkenhead. The 'Clan Ronald' had shortly before arrived from Bombay, and had a cargo

of grain and seed aboard. The rats which the ratcatcher caught on this ship were all black ones, and he believes that there were none of the ordinary brown ones there, for he never either caught or saw any, though he says that he has seen both sorts together on other ships. They are very fond of warmth, and remain on the ships, whatever the cargo may be. He catches them in round cage-traps with a special kind of bait, but he would not say what it was. The tail of the Black Rat is—so he says—always half-an-inch longer than its body, and its ears are exceptionally thin. They breed very freely. I remember that the man from whom I used to get them in London told me that he used to catch them on the different ships in the London Docks.—F. H. MILLS (Red Hill, Beaumaris, Anglesea).

Barbastelle in Northamptonshire.—A solitary specimen of the Barbastelle, *Synotus barbastellus* (Keys. & Blas.), was found under the loose bark of an old elm, at about twelve feet from the ground, near Pilton, Oundle, on March 22nd, and was brought to me alive. This species is recorded by Jenyns (Manual Brit. Vertebrates, 1835, p. 29) to have occurred in this county, but the present is the first that has come into my possession therein. I may mention that of the eight species of bats hitherto recorded as having been found in Northamptonshire, I have now handled living specimens of six. The remaining two not yet found by me are *Vespertilio daubentonii* and *V. emarginatus*. I have good reason to believe that the Serotine, *Vesperugo serotinus*, is to be found in our neighbourhood, but up to the present I have no proof of its existence here.—LILFORD (Lilford Hall, Oundle).

Bearded Seal on the Norfolk Coast.—In my note on the above occurrence (p. 82), I stated that “the mounted skeleton of this animal would in due course be placed in the Cambridge Museum” of Zoology. A letter which I have just received from Mr. Harmer, I regret to say, necessitates the modification of this statement, for he informs me that the skeleton is not complete enough to be worth articulation, but that the separate bones will be kept there, and their origin properly recorded in the Catalogue.—T. SOUTHWELL (Norwich).

The Marten in Ireland: Corrigenda.—P. 136, Co. Meath, *for* Dawes *read* Dames, and so throughout the article; Co. Wicklow, *for* Seeper *read* Leeper. P. 137, Co. Carlow, *for* P. W. Trim *read* P. W. Finn. P. 138, Co. Wexford, *delete* young before Marten; and *for* copse *read* open. P. 141, Co. Galway, *for* Ahascough *read* Ahascragh. Correspondents should write proper names more distinctly.

BIRDS.

Woodcock breeding in the Lake District.—If you will kindly allow me, I would like to add a little to what has already been stated (pp. 112, 152) on Woodcocks breeding in the Lake District. Last year, in Isell

Woods, which are five miles from Cockermouth, I knew of three nests. In these woods a few pairs have bred for several years. The nests were, without an exception, placed beneath low bushes on high dry ground. During incubation the birds allowed me to approach closely to them. The same year, in a wood within half-a-mile of Cockermouth, I also knew of a nest which contained four eggs, but they were destroyed.—J. R. DENWOOD (Kirkgate, Cockermouth).

As two recent notes (pp. 112, 152) may give rise to the impression that Woodcocks only nest *sparingly* in the Lake district, and that this is a development of recent years, it may be worth while to quote the following passage from the Rev. H. A. Macpherson's excellent 'Fauna of Lakeland': "Those of us who have grown up within the last thirty years, during which the Woodcock has been generally recognized as breeding abundantly both in England generally and in the Lake district in particular, are hardly competent to understand the interest which attached to the nesting of the Woodcock early in our own century." Mr. Macpherson further states that T. C. Heysham was aware of the fact that Woodcocks nested in the district in 1831, and that the eggs were actually found near Carlisle in 1837. So commonly do Woodcocks nest with us in Furness, that, though only at home at intervals, I have on two occasions seen a Woodcock carrying one of her young ones as described in 'The Zoologist' for 1879 (p. 433). In one of these instances the burden must have been heavy, for, on hunting for the rest of the brood, I put up one of the young birds, which was sufficiently fledged to be able to fly away. The whistling and croaking of Woodcocks during their evening flight is almost as familiar to us in Lancashire as the drumming of Snipe, or the call of the Curlew. Richard Holme, a local gamekeeper and an excellent observer, informs me that he has heard a peculiar sound at night, which he attributes to a Woodcock keeping her brood together. Can anyone confirm this belief? He has frequently caught Woodcocks in steel traps set for rabbits.—CHARLES F. ARCHIBALD (Rusland Hall, Ulverston). [As the setting of spring traps for rabbits above ground is now prohibited by Section 6 of the Ground Game Act, it is to be hoped that Woodcocks will in future escape this danger.—ED.]

The Hawfinch in Epping Forest.—The Hawfinch is exceptionally abundant in Epping Forest this spring, and during a walk on the morning of March 12th I came across three large and noisy bands, each flock numbering from forty to fifty birds. Epping Forest has always been the home of this shy and interesting species, and the late Henry Doubleday was the first to notify its permanent residence and nidification in this country, from observations taken in this neighbourhood. During this same walk I identified no less than thirty-three species of birds,—a fair winter record for a district only twelve miles from London.—A. D. SAPSWORTH (Higham Lodge, Woodford Green).

"Cuckoo seen in March."—With reference to the note under this heading (pp. 150, 151), I would like to ask, "Is it at all probable that the bird in question was a Cuckoo?" Many times as I have seen Cuckoos, and observed their habits, I have never seen one fly along the bottom of a hedge, and then enter in the manner described. On the contrary, this is exactly what the Sparrowhawk often does when beating the hedgerows for prey. The Cuckoo almost always flies at some elevation, and alights in some conspicuous place; for example, the top of a stone heap, a fence-rail, or, if in a tree, on some large branch. Nor would the Cuckoo, which is an exceedingly shy bird, fly along as described in front of the observer. It is a far more likely assumption that the bird was a hawk than a Cuckoo that either survived the past very stormy winter in this country, or arrived on these shores more than a month before the usual time. Some years ago I observed a Cuckoo in the County Wicklow on April 7th, an exceptionally early date, and the bird then attracted my attention by its note.—ALLAN ELLISON (43, Cintra Park, Upper Norwood, S.E.).

I have not as yet ever seen a Cuckoo that was even supposed to have been obtained in this country before April; till I have seen a specimen positively sworn to by a competent person as so obtained, I shall remain, as at present, entirely incredulous.—LILFORD (Lilford Hall, Oundle.)

Having kept notes of the arrival of the Cuckoo in this country for more than thirty years I find the earliest to have occurred on the 6th April, 1844, but about the 14th is the more usual date. There is a saying in Sussex that it is turned out at Heathfield Fair, which is held on that day—the name of the village is rustically pronounced "Hevel."—WILLIAM BORRER (Cowfold, Horsham).

From numerous observations made by competent naturalists in different localities it appears that the usual time of arrival of the Cuckoo in this country is between the 20th and 27th April; and the average date of its appearance may be said to be on the 23rd of that month, St. George's Day. In no instance, so far as I am aware, has the bird been heard, or seen (by any competent observer) before the 6th of April. On that date in 1872 it was observed at Torquay, but this was considered by my informant an unusually early date at which to meet with it. April the 23rd is taken as the average for the whole of England and Scotland. In the South of England April the 15th would be nearer the date of its arrival. It is surprising how few people are to be trusted, either in the matter of *eyes* or *ears*, in regard to the Cuckoo. Many do not know a Cuckoo on the wing from a male Sparrowhawk, and others convince themselves that they have heard this bird's notes when they have been listening to a clever imitation by some village bird-nesting boy, or to the still more deceptive notes of a cuckoo-clock in a neighbouring cottage.—J. E. HARTING.

Such a bird as a "March Cuckoo" has no place in my experience. It

has struck me that where any attempt has been made to describe these early birds, the few and very vague particulars given have always appeared to indicate the plumage of the young bird, an obvious absurdity, but very suggestive of the Kestrel. I have now before me a table of "Indications of Spring," extending over a very long period, and kept by a succession of naturalists of the same family, and in the same parish; the date of the Cuckoo's first note is there recorded for 106 years, the earliest being on the 9th April, 1752, the latest on the 7th May, 1767, and the mean of the 106 years the 23rd April.—THOMAS SOUTHWELL (Norwich).

There is no inherent impossibility in *Cuculus canorus* arriving (from its winter quarters) in Great Britain a few weeks earlier or later than usual. In the North of Scotland we look for the arrival of this Cuckoo during the first days of May, fully a fortnight later than in the South of England. Experience teaches us that the bulk of species popularly termed "our summer migrants" are annually seen and heard in Southern Britain about the same date every year; but you may rest assured that irregularities are frequent.—H. A. MACPHERSON (Carlisle).

As to the Cuckoo, I have nothing much to add to what I have already published in my 'Birds of Oxfordshire' as to the date of its arrival. The Cuckoo seldom reaches North Oxon before the last week in April. In twelve years—1878–1889—the average date of my own observation of it has been the 27th or 28th. The earliest date is the 20th, in 1883. The dates of my observation of it since that work was published are—1890, April 26th; 1891, April 27th; 1892, April 29th. In 1893 I was abroad. In my "Notes on the Ornithology of Oxfordshire," in 'The Zoologist' for March, I mention a Cuckoo reported as heard last year on March 28th by a Mr. W. Wyatt, who is a birdstuffer, and ought not to be mistaken. I may add that I am not an unhesitating believer in March Cuckoos. But March at the date mentioned is almost out, and I am informed that the remarkable summer of 1893 had then already commenced, I think it possible that the observer was not mistaken. The appearance of a Cuckoo in the last days of March, in an exceptional season, is, however, quite another thing from the arrival of the bird in the first half of the month in a normal year.—O. V. APLIN (Bloxham, Banbury).

On referring to my son's diary, which I have before me, I find that the earliest record of the arrival of the Cuckoo during the last twenty years was on April 17th, 1875, and it is usually about the third week in April before it is seen here. Often have I been told "in March" that the Cuckoo had been seen or heard, but on investigation it proved to be a Kestrel which had been seen, or a boy imitating the Cuckoo that had been heard. It is surprising to hear the accuracy with which some boys can repeat the note of this bird, deceiving sometimes a well-practised ear.—JAMES CARTER (Burton House, Masham, Yorkshire).

I quite agree with you regarding the period of the Cuckoo's arrival. The earliest record I have is April 16th. I was talking lately to an old lady who is 82 years of age, and has lived here in the park for upwards of fifty years. Her husband was gamekeeper at Levens in the time of the late Hon. Mrs. Howard. During all those years she never saw or heard a Cuckoo in March. She told me that there was an old saying that the "Cuckoo never comes to the bare thorn." Strange to say I once shot a young Cuckoo as late as the 3rd of October.—J. HALL (Head Gamekeeper to Capt. Bagot, Levens Park, Milnthorpe).

Norfolk Notes: Corrigenda.—I shall be glad if you will make the following correction in my notes under this heading:—For "my duck-pond was visited by a Shoveller" read "the ducks on my pond were increased by the addition of a Shoveller."—J. H. GURNEY (Keswick, Norwich).

REPTILIA.

The size of British Newts.—In an article on this subject (p. 145), Mr. Boulenger alludes to his having captured sixty-six specimens in half-an-hour in some puddles. A description of the locality, which is well known to me, may be of interest. It was originally an extensive gravel-pit, which subsequently became a small lake. In this, no doubt, the Newts bred and thrived undisturbed for a number of years; their inaccessibility and seclusion, as also the large number Mr. Boulenger had to select from, will probably account for the fineness of the specimens mentioned. Last year the pit was filled in, and when the Newts once more resorted to their breeding-haunts they found but a few small pools, which proved little better than a death-trap for them. The whole of the specimens obtained were from two puddles, the combined superficial area of which did not exceed eight square yards. I again visited the spot on April 4th, and found numbers of dead Newts on the ground, while the majority of the remainder were blind and diseased, through the partial drying up of the water.—EDWARD DODSON (Taxidermist, Spring Grove, Hampton).

Palmated Newt at Scarborough.—On April 2nd I had the pleasure of identifying several specimens of the Palmated Newt, *M. palmipes*, which had been taken, with Common and Great Crested Newts, in a pond near Scarborough. The specimens included two males and two females, whilst many others were observed by their captor, Mr. Oxley Grabham. I believe I am correct in saying that this is the first record of this amphibian in the Scarborough district, although it has been reported from Whitby, twenty miles further north.—WM. J. CLARKE (44, Huntriss Row, Scarborough).

Palmated Newt in Herefordshire.—About the beginning of April last I obtained several of this species, together with the two commoner kinds, from a small pond in Edoin Woods, near Bromyard. So far as

I know, it has not been previously recorded as occurring in Herefordshire.—
F. L. BLATHWAYT (Bromyard).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 5th, 1894.—Mr. F. CRISP, Vice-President, in the chair.

Mr. L. Greening was admitted, and Messrs. W. C. Grasby, J. D. Haviland, J. Smith, and J. F. Wilkinson were elected Fellows of the Society.

Sir Joseph Hooker, K.C.S.I., C.B., exhibited a portrait in oils of Sir Samuel Bentham, Kt., a Colonel in the service of the Empress of Russia, painted at St. Petersburg in 1784. He was father of George Bentham, the distinguished botanist and former President of this Society, 1861—74 (Proc. Linn. Soc. 1886, pp. 90—104).

Mr. B. Shillitoe exhibited some specimens of a primrose having abnormal leaf-like bracts immediately below the true calyx, and found growing with ordinary flowers of the same species.

An exhibition of some trap-door spiders and nests, by Mr. F. Enoch, was deferred to a subsequent meeting.

Mr. R. H. Burne read a paper "On the aortic-arch system of *Sacrobranchus*," in which he elucidated the method by which respiration is effected in certain fishes which in tropical countries, but more especially in India, have acquired the power of living for a longer or shorter time out of water. Referring particularly to a paper by the late Surgeon-Major Francis Day, "On Amphibious and Migratory Fishes of Asia" (Journ. Linn. Soc., Zool., vol. xiii. p. 198), he detailed the results of some recent investigations he had made, and which were characterised by Prof. Howes as original and valuable.

The Secretary read a paper, by Mr. H. N. Ridley, "On the *Orchideæ* and *Apostaceæ* of the Malay Peninsula," from the Kedah state (long. 99° 30' to 104° 30' lat. 7° N.) to Singapore, including the islands adjacent to the west coast, and those on the east coast of Johore, with the addition of a few from Southern Siam, on the borders of the Malay Peninsula, the entire area comprising about 50,000 square miles. Mr. C. B. Clarke, who criticised the paper, commented upon the important additions made to the existing knowledge of the *Orchideæ* of this region, of which so large a portion was even yet botanically unknown.

April 19th.—Prof. STEWART, President, in the chair.

Sir Joseph Hooker exhibited a portrait in oils of Jeremiah Bentham, father of Jeremy and Sir Samuel Bentham, b. 1710, d. 1792.

Dr. Prior exhibited specimens of *Pinus pinsapo*, with undeveloped catkins, like berries, and other specimens of conifers in flower.

Mr. J. R. Jackson exhibited an Afghan knife, the sheath of which was bound with bark of *Carragana decorticans*, selected on account of its bronze-like appearance, and gave some account of the various native uses to which this bark is put.

On behalf of Mr. George Mayor and Mr. F. R. Maw, some photographs of abnormally-situated nests of the Robin were exhibited, one of which had been built upon a book-shelf in one of the studies at Tunbridge School, and another in an old tin tea-pot which had been flung aside as useless, and had lodged in a poplar.

Mr. B. Shillitoe exhibited and made remarks upon an abnormal hyacinth.

An account of British Trap-door Spiders was then given by Mr. F. Enock, and by the aid of the oxy-hydrogen lantern and some excellent slides, their appearance and mode of life were graphically delineated and described.

In view of the approaching Anniversary Meeting, the election of Auditors was next proceeded with, when Mr. Batters and Prof. Howes were nominated on behalf of the Council, and Mr. Michael and Mr. J. Groves on behalf of the Fellows.

In the absence of the author, Mr. George Murray gave an account of Graf zu Solms Laubach's Monograph of the *Acetabulariæ*, and the principal points were illustrated with lantern-slides. The limits of the group were defined as excluding *Dasycladeæ*, and containing the living genera *Acetabulariæ*, *Polyphysa*, *Halicoryne*, and *Pleisphysa*, of which the author maintained only the first and third named. The extinct forms, principally *Aciculariæ*, were dealt with very exhaustively, and their relation to the living ones indicated. The paper consisted of a morphological account of all the forms, as well as a detailed systematic review of them, and the author's views of the relationship of the group to the forms of *Dasycladea*, *Cymopolia*, *Neomeris*, *Bornetella*, &c., possessed much novelty and interest.

ZOOLOGICAL SOCIETY OF LONDON.

March 20th, 1894.—Prof. G. B. HOWES, F.Z.S., in the chair.

The Secretary exhibited and made remarks on a photograph of a young male Indian Bison, *Bos gaurus*, proposed to be sent home as a present to the Society's Menagerie by Major G. S. Roden.

Mr. F. G. Parsons read a paper on the myology of the Hystricomorphine and Sciuricomorphine Rodents, and stated that it was based on the dissection of the muscles of examples of twenty-one species of Rodents, belonging to many families of the Hystricomorpha and Sciuromorpha, made at the

Society's Gardens. The results of these dissections had been compared with the writings of other observers, and arranged, firstly under the heads of the different muscles, and, secondly, under those of the different families. The arrangement of the muscles coincided in a marked manner with the usual classification of the order, and seemed to depend much more upon the affinities of the animals than upon their habits and mode of life. The muscles which seemed most characteristic of the two principal sections were the masseter, the long flexors of the foot, the sterno-scapular, and the digastric. Three genera of the *Dipodidae* had been examined, and were found to resemble the Hystricomorpha in many respects, while in others they approached the Sciuromorphic type.

A communication was read from Babu Ram Bramha Sányál, containing remarks on a rare carnivorous mammal of Borneo, *Cynogale bennetti*, based on a specimen living in the Zoological Gardens of Calcutta.

A communication was read from Dr. R. W. Shufeldt, containing an account of the osteology of certain Cranes, Rails, and their allies, with remarks upon their affinities.

A communication was read from Mr. O. V. Aplin, containing field-notes on the mammals of Uruguay, made during his recent expedition to that country.

April 3rd.—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, 1894.

Dr. Günther exhibited and made remarks on some specimens of the American *Lepidosiren*, *Lepidosiren paradoxa*, from the Upper Rio Paraguay, collected by Dr. Bohls.

Capt. H. G. C. Swayne, R.E., gave a description of the physical features of Somaliland, and an account of the expeditions he had made into the interior of that country during the past nine years, pointing out the localities in which the larger mammals were usually met with. The paper was illustrated by the exhibition of a large series of well-mounted heads of the various species of Antelopes and other animals of Somaliland.

Mr. O. Thomas read a paper on the Dwarf Antelopes of the genus *Madoqua*, in which three species from Somaliland were described as new, and named *M. swaynei*, *M. phillipsi*, and *M. guentheri*. A revised classification of the six known species of this genus of Antelopes was added.

Mr. R. T. Coryndon gave an account of his pursuit of the White or Burchell's Rhinoceros, *Rhinoceros simus*, in Mashonaland, and of the way he had obtained the specimens, which would shortly be placed in the British Museum, the Tring Museum, and the Cambridge University Museum.

A communication was read from Miss E. M. Sharpe, containing a list

of the Butterflies collected by Capt. J. W. Pringle, R.E., while on the march through British East Africa from Teita to Uganda. A new *Papilio* was proposed to be called *P. pringlei*, and a new genus and species of *Satyridæ* was named *Raphiceropsis pringlei*. Altogether examples of 134 species were obtained.

April 17th.—W. T. BLANFORD, Esq., F.R.S., Vice-President, in the chair.

Mr. Sclater made some remarks on the possibility of breeding the African Mud-fish, *Protopterus*, in the Society's Gardens, and called attention to a recently-published paragraph, in 'Le Movement Géographique,' in which some account was given of the phenomena of reproduction of this Mud-fish, as observed by the French missionaries on Lake Tanganyika.

Prof. Karl von Bardeleben, of Jena, read a paper on the bones and muscles of the mammalian hand and foot, in which he explained his views on the rudiments of the sixth and seventh digits or rays. These rudiments, as he showed, are situated both on the inner and the outer borders of the hand and foot; they are present in nearly all the orders of mammals, especially in the lower forms, and are always provided with special muscles.

Dr. G. Herbert Fowler pointed out the characters of a new species of Sea-Pen of the family *Veretillidæ* from a specimen belonging to the Madras Museum, and proposed to call it *Cavernularia malabarica*. Dr. Fowler likewise exhibited and made remarks on an example of *Lidaria phalloides*, belonging to the same Museum.

Mr. F. E. Beddard described two new genera comprising three new species of Earthworms from Western Tropical Africa.

A communication was read from Mr. Oldfield Thomas, containing an account of a new Antelope from Somaliland, which he proposed to call *Neotragus rupicola*. Capt. H. G. C. Swayne, R.E., and his brother, Capt. E. Swayne, B.S.C., had discovered this Antelope during their recent explorations in that country, but had not been able to bring back specimens. Two skins and a frontlet, lately received by Capt. H. G. C. Swayne from his native hunters, had enabled Mr. Thomas to establish the species.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 28th, 1894.—HENRY JOHN ELWES, Esq., F.L.S., President, in the chair.

Mr. Percy H. Grimshaw, of 58, Coniston Road, Edinburgh, was elected a Fellow of the Society.

Mr. McLachlan announced the sudden death, on the 23rd inst., of Mr. J. Jenner Weir, who joined the Society in 1845, and had been one of

its most regular attendants. He also commented on the scientific attainments of the deceased, and his social qualities. Mr. Goss and Mr. Merrifield also spoke of their long friendship with the deceased, and of the respect and esteem which they entertained for his varied knowledge and amiability of disposition.

Mr. W. Borrer, jun., exhibited a wasp's nest which had been built in such a way as to conceal the entrance thereto and to protect the whole nest from observation. He believed the nest to be that of *Vespa vulgaris* (cf. Proc. Ent. Soc. London, 1892, pp. xx and xxi). Mr. McLachlan and Mr. Blandford made some remarks on the subject.

Mr. G. F. Hampson exhibited a specimen of *Gaudaritis flavata*, Moore, from the Khári Hills, and called attention to the existence in the males of this species, in the closely allied British species *Cidaria dotata*, Linn., and also in two Japanese species (*C. agnes*, Butl., and an undescribed species), of an organ on the under side of the fore wing, which he suggested might be for stridulation; this organ consisting of a small scar of hyaline membrane situated just below the middle of vein 2, which is much curved: this scar is fringed with long hair, and has running down its middle a row of sharp spines situated on the aborted remains of vein 1, and which is curved up close to vein 2; the spines would naturally rub against part of the costa of the hind wing, but no spines or unusual roughening seems to exist on that or on any of the veins on the upper side of hind wing against which they could strike; below the scar is situated a large shallow fovea or pit in the membrane, slightly developed in *dotata* and *flavata*, but much more prominently in the two Japanese species, and, should the organ prove to be for stridulation, would probably act as a sounding-board. Mr. Hampson said that in the Japanese species *C. fixreni* of Brem, exceedingly closely allied to *flavata*, the males have no trace of this organ; and he hoped that entomologists who have an opportunity of observing *dotata* in life would make some experiments on living specimens during the ensuing summer; probably confining males and females together would lead to some results. The President, Prof. E. B. Poulton, Lord Walsingham, and Mr. Hampson took part in the discussion which ensued.

The Rev. T. A. Marshall communicated a paper entitled "A Monograph of the British Braconidæ, Part V."

Mons. Louis Péringuey communicated a paper entitled "Descriptions of new Cicindelidæ from Mashunaland."

Prof. Poulton gave an account of his recent tour in the United States, and commented on the entomological and other collections contained in the American museums. Lord Walsingham, Mr. Hampson, and the President also made some remarks on the subject.

April 11th.—HENRY JOHN ELWES, Esq., F.L.S., President in the chair. Mr. F. W. Jones, of 63, Carlton Hill, St. John's Wood, N.W., and

Dr. William Steer Riding, B.A., M.D., of Buckerell, Honiton, Devon, were elected Fellows of the Society.

The Hon. Walter Rothschild exhibited male and female specimens of *Ornithoptera paradisea*, Stdgr., from Finisterre Mountains, New Guinea; *O. trojana*, Stdgr., from Palawan; *O. andromache*, Stdgr., from Kina Balu, Borneo; *Enetus mirabilis*, Rothsch., from Cedar Bay, Queensland; and a few other splendid species from the Upper Amazons. The President, Mr. J. J. Walker, Mr. Osbert Salvin, Lord Walsingham, Colonel Lang, Mr. Champion, and Mr. Hampson made remarks on the geographical distribution of some of the species and the elevation at which they were taken.

Mr. H. Goss exhibited, for Mr. G. A. J. Rothney, several specimens of a species of Hemiptera (*Serinetha augur*, Fab.), and of a species of Lepidoptera (*Phauda flammans*, Walk.), the latter of which closely resembled and mimicked the former. He said that Mr. Rothney had found both species abundantly on the roots and trunks of trees in Mysore, in November last, in company with Ants (several species of *Camponotus* and *Cremastogaster*). The Hemiptera appeared to be distasteful to the Ants, as they were never molested by them, and he thought that the species of Lepidoptera was undoubtedly protected from attack by its close imitation of the Hemipteron. Mr. Goss said he was indebted to Mr. C. J. Gahan for determining the species. A discussion followed on the mimicking species, in which the President, Mr. Waterhouse, Mr. J. J. Walker, Colonel Swinhoe, Mr. Hampson, and others took part.

Mr. J. W. Tutt exhibited (1) a typical specimen of *Lycæna corydon*, captured in July, 1893; (2) a hybrid male (*L. corydon* and *L. adonis*), taken in copulâ with a typical female *L. adonis*, May 20th, 1893; (3) a typical male *L. adonis*, May 20th, 1893; (4) a female *L. adonis*, the pigment failing in one hind wing; (5) a pale var. of *L. corydon*, probably to be referred to var. *apennina* of Zeller, usually taken in Italian mountains, or var. *albicans*, H. S., taken in Andalusia. Mr. Tutt remarked that, of the first, Staudinger (Cat. p. 12) says "pallidior," of the latter "albicans." He also remarked that the hybrid retains the external features of the species *corydon*, but has taken on to a great extent the coloration of *L. adonis*. It was captured in copulâ with a female *L. adonis*, at a time when *L. adonis* was very abundant, and some weeks before *L. corydon* occurred (*vide* Ent. Record, iv. p. 230).

The question having been raised by the President as to the number of meetings of the Society which it was desirable to hold during the year, and the most convenient dates for such meetings, a long discussion on the subject ensued, in which Mr. Waterhouse, Mr. Salvin, the Hon. Walter Rothschild, the Rev. T. Wood, Mr. S. Stevens, the Rev. J. S. St. John, and others took part.—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

Text-book of Zoology. Fifth Edition. Re-written and enlarged. By H. A. NICHOLSON, Regius Professor of Natural History in the University of Aberdeen. 8vo. Blackwood & Sons, Edinburgh and London. 1894.

THIS volume, when compared with its predecessor of 1886, shows an increase of 13 chapters, 177 pages, and 94 woodcuts. This is found to be mainly due to extension of the section dealing with the Vertebrata, and more particularly of the chapters devoted to Pisces and Mammalia. These show an increase of 20 and 64 pages, or 100 and 120 per cent. respectively; an analysis which renders perfectly clear the author's special acknowledgments of indebtedness to the recently published work on the Mammalia by Sir William Flower and Mr. Lydekker. And further perusal of the work justifies the suspicion, which this circumstance arouses, that it is a compilation of mere text-book knowledge.

The faulty nature of the earlier editions of this treatise and its more advanced associate the 'Manual of Zoology,' has been in the past notorious; but their author, adhering to his original scheme with true British pluck, has so far emended and improved the succeeding issues, that both books are now presentable and reliable. Their chief weakness has all along been due to insufficient recognition of the study of development, and the leading novelty in the present volume is the incorporation of a chapter on "Reproduction and Development of Metazoa," presumably designed to overcome this. This chapter extends to 14 pages only, and deals in a most elementary and out-of-date fashion with the earliest stages of the developmental process.

Evidence is forthcoming that this work is primarily designed for the use of the horde of medical students who yearly flock to the Scottish universities, to come under the influence of a system, under which, time that might be better spent in the wards is devoted to lengthy courses in botany and zoology. In the progress of his career the Scottish medical student is subjected to a recurring diet of "Embryology," in both the purely scientific and strictly professional departments of his study. We question, however, whether the "too many cooks" do not here spoil the (embryological) broth, and whether the

educational value of the science is not, by the means adopted, lost. The facts which have provoked us to this expression of opinion appear to have weighed with the author in the limitation of his new chapter, but this is so sketchy and insufficient, and in part so erroneous, that it might well have been left over until recast and extended. The "biological" discipline, as understood south of the Tweed, appears to us unquestionably the right one for the medical student, so over-crammed and under-educated. So long, however, as this remains insufficiently recognized on the northern side of the border, it is better that the student should obtain a knowledge of facts concerning things that are and have been, such as he will find treated in a sound and uniform manner in the book before us, than that he should be led astray by profitless speculation concerning possibilities which may (or may not) have occurred, in the fashion of certain other "text-books" which might perchance fall in his way. The system upon which we have commented is bad; the book, written up to it, although in many respects antiquated and by no means free from error, is withal sound and well-balanced, so far as it goes.

The Partridge. Natural History by the Rev. H. A. MACPHERSON; Shooting by A. J. STUART WORTLEY; Cookery by GEORGE SAINTSBURY. 8vo, pp. 276, with Illustrations. London: Longmans, Green & Co. 1893.

THIS is the first volume of a new series treating of the furred and feathered game of Great Britain, and edited by Mr. A. E. Watson. The title above quoted shows the divisions of the subject, the novel feature being the section on Cookery; and after all, when we consider the enormous quantity of game which is killed annually throughout the United Kingdom, it is as well to have some authoritative advice as to the best means of utilising it. Under the guidance, then, of the above-named writers, we are made pretty well acquainted with almost all there is to be learnt concerning this most popular of game-birds. Finding him at early dawn in his proper haunts, we follow him, with Mr. Macpherson, throughout the day, watch where he rests and feeds, ascertain the nature of his food, listen to his well-known call, see the covey pairing off for the breeding season, find the nest and note the materials of which it is composed,

together with the number and colour of the eggs; await the period of incubation, and observe the behaviour of the hen bird, and the growth of the chicks until they are old enough to take care of themselves, and are strong enough on the wing to come under the notice of Mr. Stuart Wortley. We are then instructed in the whole art of Partridge-shooting, whether by walking them up in line, shooting over dogs, or driving; and to the majority of readers, we imagine, this will prove the most attractive portion of the book. In view of the two volumes on Shooting which form part of the Badminton Library, Mr. Stuart Wortley had no easy task before him when he undertook to write the treatise now before us. It was difficult to go over the ground which had been so well traversed in those earlier volumes by such a past master as Lord Walsingham, without risking some charge of plagiarism, or at least some want of originality. Mr. Wortley, however, has surmounted the difficulty, and very well has he done it. The secret of his success, as it seems to us, lies in the fact of his drawing upon his own experience, which is evidently extensive, and saying what he has to say in a bright, fresh and original manner, which carries the reader with him through every page, "from find to finish."

We have been particularly struck with his last chapter, headed "*Verbum sap.*," in which he discusses the present aspect of the Game Laws, and the silly clamour which periodically arises for their abolition. His observations on the whole are just, and often forcible. Thus:—

"The late Mr. Peter Taylor, M.P., who was about as good a judge of the relations between landlord, tenant and labourer, as a modern alderman would be of a Roman triumph, loudly demanded and eventually obtained the last Select Committee on the Game Laws twenty years ago. His discomfiture was complete when it was found that the great weight of evidence given by farmers was in favour of retaining them!"

Mr. Wortley insists that good farming and a large stock of Partridges are absolutely compatible conditions, and are often seen together. "This," he says, "the farmers cannot deny. If they do, depend upon it they are discontented men and bad farmers, and consequently not worth having as tenants."

We should like to make further extracts, but the demands upon our space preclude this. We must content ourselves with commending the book, which is well planned, well written, and has, moreover, some excellent illustrations.

THE ZOOLOGIST

No. 210.—June, 1894.

THE PRESERVATION OF AFRICAN BIG GAME.

BY CAPT. A. H. GIBBONS.

[A Committee of English sportsmen and naturalists having been formed for the purpose of devising some scheme for the protection of South African mammals, chiefly Giraffe, Zebra, Eland, Gnu, Koodoo, and other Antelopes, several of which (owing to indiscriminate slaughter) are already on the verge of extinction, the following statement has been drawn up by Capt. A. H. Gibbons for the consideration of the British South African Chartered Company.—ED.]

It is a notorious fact that many species of South African game, notably such as have not receded northwards before the advance of colonisation, are becoming so scarce, that some of the rarer species will shortly follow in the wake of the now extinct Quagga, unless steps are taken to preserve them before it is too late. To meet this end it is proposed:—

(1). That a Society be formed which shall have for its object the preservation of small herds of each of the thirty-five or forty distinct species having their habitat within measurable distance of the district selected for the enclosure proposed below.

(2). That for this purpose a suitable tract of country—of say 100,000 acres—be enclosed with a wire-fencing, strengthened by a strong live fence of thorn on the outside. It is hoped that the British South African Chartered Company, in consideration of the objects of the Society, may allow such an enclosure to be made in the district near Fort Salisbury which has already been reserved for game by the Company. In this district the Eland,

Koodoo, Roan, and Sable Antelopes, Hartebeest, Zebra, Blue Wildebeest, Reedbuck, and other species still exist, herds of which could with little difficulty be driven into the enclosure. To these might be added the young of other species not indigenous to the district. To avoid overcrowding the herds of each species would necessarily be limited; the species marked * in the appended list (as being more immediately threatened with extinction) to twenty head, and others to twelve, or thereabouts.

Eland	Red Rhebuck
Koodoo	Vaal Rhebuck
Roan Antelope	*Bontebuck
Sable Antelope	*Blesbuck
Gemsbuck	Duiker
Waterbuck	Steinbuck
Blue Wildebeest	Oribi
Tsessebe	Grysbuck
Hartebeest, <i>B. caama</i>	Klipspringer
„ <i>B. lichtensteini</i>	Bluebuck
Pallah	Natal Redbuck
Bushbuck, <i>T. sylvaticus</i>	*White-tailed Gnu
„ <i>T. scriptus</i>	Damara Antelope
*Speke's Antelope	Giraffe
*Inyala	Ostrich
*Sitatunga	Warthog
Reedbuck	Bushpig
Lechwe	Zebra, <i>E. burchelli</i>
*Pookoo	„ <i>E. chapmani</i>
Springbuck	* „ <i>E. montanus</i>

(3). That, as a means of profit, specimens be exported, at market prices, for the use of existing Zoological Societies. For this end calves would be taken from their dams as young as possible, reared on cow's milk, and shipped at Beira, which will, no doubt, shortly be connected with Fort Salisbury by rail. A farm would be necessary *outside the enclosure* to provide milch-cows for rearing purposes. There seems to be no reason why this farm should not combine stock-rearing on a sufficiently large scale to cover all current expenses, especially since no further increase in the staff would be necessary. An experienced South African farmer, capable of superintending and protecting the interests of the Society, would be appointed to manage the

farm, and preserve the game inside the enclosure. It would be necessary also, for the first few years at least, that some responsible person should control the expenditure on the spot, give general directions to the manager, and devote himself in the calving-seasons to procuring as many species of game as possible from various districts to be turned loose in the enclosure. The estimated capital required for such undertaking would be about £5000.

[While heartily sympathising with this scheme, and recommending it to the consideration of the British South African Chartered Company, we take the opportunity of anticipating adverse criticism as to the feasibility of making and maintaining large enclosures for Big Game by showing what has been done in this direction in America. The following account, from our American contemporary 'Forest and Stream,' of a large "Game Park" in New Hampshire, comprising some 28,000 acres, will be read with interest by naturalists as well as sportsmen.—ED.]

THE CORBIN GAME PARK IN NEW HAMPSHIRE, U.S.A.

By JOHN R. SPEARS.*

SOME years ago a friend presented to Austin Corbin, the well-known railroad man, a few young Deer. Mr. Corbin accepted them, and having a great country seat that included many acres of woods as well as cleared fields out on Long Island, he caused a part of the woods to be suitably fenced, and turned the Deer into the inclosure. Mr. Corbin, at that time, was neither a sportsman nor a naturalist, in the sense in which these terms are generally understood. He had no especial interest in wild animals of any kind. Nevertheless, as a lad he had lived on a farm in New Hampshire, among the foothills of the White Mountains, and had trapped Woodchucks, and shot Partridges, and chased Foxes, and the good healthy delights of those days lingered in his memory. Small wonder then that the gentle pets his friend had given to him won their way into his affections from the moment they became his. It was a new pleasure—something he had never known before—to go and watch their graceful

* From 'Forest and Stream.'

motions and gaze upon the beauty of their forms. Moreover, Mr. Corbin had a son, and Austin junior was as much delighted with the pets as his father.

There was ample room on the Long Island estate for more than the few Deer, and the Corbins decided that more should be had. This led to the examination of sundry books on the subject of Deer culture, if one may use the term, books like Judge Caton's, for instance, while 'Forest and Stream' and other periodicals were necessarily read regularly. Certainly the love of nature grows with what it feeds upon, if any emotion of the heart does. If Deer could be kept, why not Elk, Moose, Antelope, and Buffalo—especially the Buffalo?

Mr. Corbin had lived in Iowa when a young man, and in the days when the herds of Buffalo on the plains of Nebraska, Kansas, and Texas numbered untold thousands. It was a great pity that such noble animals were likely to become extinct, and the Corbins determined to join in the effort to perpetuate the species. They had begun with a few Deer, and they added Elk, Antelope, and Buffalo, and then it became apparent that the Long Island estate was too small for the proper care of these animals, or at least for the care which the owners desired to give them.

It is to be particularly noticed that the Long Island estate was not suited to the treatment that the Corbins wished the animals to have. From caring for their few pets had grown the desire to rear herds of these animals under such conditions of freedom as would leave them with all their natural characteristics. A pet Deer was beautiful, but it was not the Deer of the wild woods after all. A pure bred Buffalo in a barn-yard was in fact a Buffalo, but he was too much like a Durham bull to be perfectly satisfactory. On the Long Island farm the animals could scarcely become anything more than pets.

So the thoughts of the elder Corbin went back to the days of his youth and the foothills of the White Mountains. As most of our readers know, there is plenty of land in New Hampshire that is just as wild now as it was when Hudson first looked on the ground where the Statue of Liberty now stands. There was a deal of it in Sullivan County, perhaps not the wildest in the State, but certainly plenty of unbroken forest that covered hills and valleys, and surrounded little lakes, forests of birch and beech, and maple and pine, and spruce and hemlock, and balsam—forests

beautiful and fragrant enough to give a city man the heartache when he thinks of them.

Mr. Corbin determined to buy from 20,000 to 30,000 acres of these hills and valleys, and there establish a park for his new-found four-footed friends in which they would find the conditions as nearly as possible those to which they were best suited. Mr. Corbin eventually got 22,000 acres in one tract.

The next thing was to fence it, and only those who have tried building elk-tight fences can appreciate the job. Here was a tract of over thirty-five square miles of land to inclose. They started out with a wire-net six feet high, secured to stout posts ten feet apart. Above the net they strung ten lines of barbed wire, and that made a right good fence. But when eighteen miles had been erected, they abandoned the wire-net and used barbed wire only for the rest of the way. That was cheaper and just as good. It is not uninteresting to note that the fencing cost 74,000 dollars, or £14,800.

In all, nine gates were to be placed in this fence, with a keeper's lodge at each gate, made necessary by the presence in every community of the skulking lout who will steal or destroy the property of the well-to-do, and especially such property as this fence would enclose. Mr. Corbin was sure his park would not in any way interfere with the rights of legitimate sportsmen.

Here in this tract of woodland, with only enough cleared land on it to afford meadows over which the animals would like to wander at times, were gathered twenty-five Buffalo, sixty Elk, over seventy Deer, half-a-dozen each of Caribou and Antelope, eighteen Wild Boars imported from Germany, and an unknown number of Moose—perhaps a dozen. He had four Reindeer brought from Labrador, but all died. He hoped to have also a community of Beavers, for the lakes and streams are admirably adapted for these beautiful animals.

Quite as interesting as any description of the park and its inhabitants is the story of the gathering of the specimens. It is too long to tell in full, but room remains for enough. The agent employed to gather a large part of the animals from Canada was Thomas H. Ryan, who had served Mr. Corbin in a number of capacities for the previous twelve years. In October, 1890, Ryan was commissioned to go to Canada to see what could be done about getting "any wild animals there except Bears, Panthers,

Wolves, and Foxes." At Sherbrooke he met a friendly newspaper man who said one Dan Ball, of Megantic, knew all about the Deer of that country, and so to Megantic he posted. He met Ball, and found him able and willing to get the Deer. He then went fifty miles to North Bay, 200 miles west, and from there to Mattawa, on the verge of a region where Moose abound, Deer are plentiful, and Beaver possible to obtain alive. A contract was made with a trapper for a supply of all these animals—at least twenty of each, if that number was possible.

Meantime Dan Ball had gone to work at Megantic by selecting a few friends, and looking over the woods to see where the Deer were "yarding." In December the snow became five feet deep in the woods, and Dan knew of one "yard" where at least 300 Deer were gathered together. Then he and six others went on snow-shoes, with buckskin thongs, and one gun loaded with powder only. Locating a bunch of Deer in a thicket, six of the men crept up as near as possible to the leeward without alarming them. Then the seventh came tearing down with the wind and with a wild yell, and the discharge of the gun, scattered the bunch like a flock of Quails before a cur pup. Some of the fleeing beauties plumped into the snow, that was so deep and so fluffy, that they sank out of sight at the first struggle, nor could they escape till Dan and his friends kindly lent a hand. In all a dozen were captured thus, and with legs bound with soft leather thongs, were carried to an old shanty in the woods some distance from Megantic.

In January Ryan went away to bring the Deer to the park in New Hampshire. Megantic is on the Canadian Pacific road. A box-car was sent to a siding formerly used by a lumber mill, and there carpeted with hay, straw, and a good supply of browse. The ends were then partitioned off from the space between the doors by means of poles, and within the spaces thus formed the Deer were placed, being simply lifted in. They had been kept in the meantime in the old mill unbound. With Dan Ball to look after and especially to water the Deer, the car was hauled to Newport, Vt., the location of the United States customs office, where they were passed duty free, and were sent on to Newport, N.H., by way of Concord, nearly 100 miles farther than necessary. The extra ride proved disastrous, for one Deer died *en route*, and

two after their arrival. Nine were as well and frisky as when in their native forests.

The Buffalo in this park came originally from Montana, but were purchased of a Minnesota man. The Moose, Elk, and Caribou came from Minnesota also, and were captured along the Canadian border.

Among the interesting experiences in the transportation of the animals for this park may be mentioned these: Moose have been carried 2000 miles in four days without apparent injury. The last consignment included sixteen Moose, three Deer, and one Caribou. All arrived in good condition, but eight Moose died afterwards, because, it is thought, of the change in their diet, or water, or both. On one occasion, when thirty Deer were *en route*, a collision with another train killed twenty-two of them outright, and four more died afterwards.

It is noticed that the largest Deer most easily succumb to railroad travel. None of the animals ever eat or sleep while the car is in motion. On a side track they will eat a little. There seems to be more danger of their suffering from heat in a box-car than from cold, but the worst trouble is in the jerking to and fro of the car when the train is stopping or starting. They are fed on barley, corn, bran, and hay. In the woods they are expected to live as they would naturally do, but places are established where food is left for them, so that none shall lack.

Beginning with a few pet Deer in a paddock, the Corbins now have a private zoological park, where, if at any such place in the world, the animals in it may be seen and studied under the most natural conditions. His outlay up to the completion of the park is not far from 400,000 dols.

Since the foregoing was written we have obtained the following information, chiefly in relation to the breeding of the animals in their new environment, it can hardly be called captivity when we consider that they are at liberty to wander over 28,000 acres of woodland, hill, and valley.

In respect of breeding, the park has proved a great success. All the animals have taken kindly to their new surroundings, and their numbers are being materially increased by births. Of the twenty-two Buffalo which were turned out about a year ago, eight of the cows proved in calf, and two young have been added to the

herd. The Elk, which bred to a limited extent on Mr. Corbin's Long Island estate, have found their mountainous New Hampshire home more to their liking, and have already increased 50 per cent. Next to the Elk, the most accurate count has been kept of the Moose, which, unlike their gregarious brethren, go in pairs during the rutting season. It was at first feared that these unusually retiring animals would not breed in the park, but it was subsequently ascertained that six of the cows were with calf. There are upwards of sixty Moose in the park, and they make a much wider range in travelling than the Elk (or Wapiti), which keep pretty well to one locality where there is considerable brush and small growth, and no doubt abundant feed.

The agent who was instrumental in securing for Mr. Corbin the first denizens of the park, has the head of a particularly fine Moose in his possession. The unmounted head weighed 300 lbs. and the horns, which show eleven points, have a span of about five feet. This head was bought of an Indian in Mattawa, and is said to be the last green head taken out of Ontario previous to the passing of the law forbidding the killing of Moose.

To come back to figures, the Wild Boars, imported from Germany in September, have been frequently seen. They have evidently gained by natural increase, and must be quick travellers, as three or four herds have been reported in different localities at nearly the same time by the gamekeepers. The old boars have grown considerably, and are wonderfully fleet of foot, for, unlike the domestic hog, they do not fatten. As far as can be ascertained, all the other animals, including the several species of Deer, have multiplied considerably, and their change of habitat, and the fact that the big fence occasionally checks their extended wanderings, does not seem to cast any blight on the even tenor of their lives.

Included in the park are two ponds of twenty and thirty acres respectively, and probably 100 miles of streams. The ponds were cleaned out in 1890, and many eels and other fish destroyed, and now the ponds and streams are all stocked with trout.

While in London Mr. Corbin purchased 20,000 hawthorn trees. Four thousand of these were planted in the spring. They are for the purpose of forming a hedge strong enough to prevent the Buffalo and other large animals from getting out. This tree, of which there are two varieties, the white and black, is used

very extensively for inclosing the game-parks of England and France. It grows from eight to ten feet in height, and is the toughest and strongest tree that can be found, making, with its interlocking and elastic branches, a hedge that would resist a battering ram. The trees are being planted inside the big fence of barbed and woven wire, and will eventually take its place when the latter becomes weakened through rust and exposure.

There will be no hunting in the park at present, though in future years, when the animals have multiplied beyond the resources of their domain, it is possible that Mr. Corbin may adopt this means of thinning them out.

The development of this enterprise is being watched with decided interest by sportsmen and naturalists. Success in New Hampshire, when it shall have been demonstrated beyond the peradventure of a doubt, will prompt similar enterprises in other parts of the country. While much interest is felt in the introduction of foreign species, Americans are naturally most concerned with the successful conservation of bands of American big game, the Elk, and the Antelope, and the Buffalo. May these wild creatures yet feed on a thousand hills of the New England and other Eastern States, and on the game preserves of the west!

Besides the New Hampshire park, Mr. Corbin has two other game preserves. On his Long Island estate he now has twenty-one Elk and about eighteen Deer, and at Manhattan Beach he has twenty-five Elk. At the latter place he has ten acres inclosed with an open wire fence. There will soon be dug here a large pond, which will be filled with salt water from the tides of Sheepshead Bay. In this pond are to be a dozen Seals and ten Sea-lions; the former from St. John's, Newfoundland, and the latter from the Pacific coast.

NOTES ON THE ORNITHOLOGY OF NORTHAMPTONSHIRE
AND NEIGHBOURHOOD FOR 1893.

BY THE RT. HON. LORD LILFORD, F.L.S., F.Z.S.

I CONTINUE my notes from the end of 1892 (Zool. 1893, p. 97).

JANUARY.

1st. I received a letter from the Rev. Henry H. Slater, of Irchester Vicarage, in which he informed me that he had observed four Buzzards together (apparently on passage), near that place, on Sept. 26th ult. I noticed my old Raven rolling with evident enjoyment, and, if I may use the term, "dusting" himself, in the snow in front of the house.

2nd. R. C. reported a vast flight of Wood Pigeons as passing up our valley near Lilford in a westerly direction this morning; he did not see the head of the column, but told me that he watched the passage "in a thick stream" for at least ten minutes. Snow-showers and 16 degrees of frost.

8th. Thaw set in, after a maximum of 27 deg. of frost on 5th inst. Some three hundred Mallard seen on a ploughed field a few days ago, near Oundle Wood, reported to me by Mr. McKee, of Oundle.

12th. A solitary male Pochard shot near Aldwinckle.

14th. Our engine-man tells me that about the beginning of this month he several times noticed a Dipper near the engine-house and Lilford Locks, and that a good many Siskins are haunting the alders along the river-side. Slight fall of snow.

15th. Two large Grebes seen on the river near our boat-house.

23rd. Dull, and very mild. Wood Pigeons in full "coo" near the house.

26th. I heard from Mr. W. J. Horn, of Kingsthorpe, that a Great Grey Shrike was seen and shot at near Weston Favell, on Nov. 1st ult. R. C. reported that on 23rd inst. two Swans, that he felt certain were Bewick's, visited our park-pond.

27th. Nine geese passed up the valley near Lilford in a S.W. direction. A big lot of "fowl" reported on the river near Aldwinckle. A large "parliament" of Rooks upon Pilton meadow just before sunset. These assemblages of Rooks are, in my

experience, almost invariably followed by a gale of wind, but this instance proved to be an exception to the rule.

29th. Thirteen geese reported to me as going southerly over Thorpe Waterville.

30th. The decoy-man reported having seen nine swans on 25th, and eight yesterday; from his account, I am convinced that the greater number of these birds, if not all of them, were Bewick's Swans. Mr. F. A. Irby, who was staying with us at Lilford, reported a flock of swans near Aldwincle to-day.

FEBRUARY.

1st. About a dozen geese seen near Thorpe Waterville.

2nd. My son, who left Lilford for London this morning, telegraphed to me from Northampton: "Swans on flood between Ringstead and Higham Ferrers." I heard from the Rev. J. T. Watson, of Woodford, as follows:—"About a dozen Swans came here rather more than a fortnight ago, and seem to have settled down." The decoy-man reported twelve swans near the decoy on 31st ult.

5th. In reply to an enquiry about the Swans at Woodford, I to-day received a letter from Mr. Watson above mentioned, to the following effect:—"I have just been looking at the Swans through the best telescope that I can get, but I cannot be certain about the colour of their bills. I feel, however, pretty certain that they are light yellow and black. There are two grey birds, all the rest are white. When they fly, I am told (though I have not heard them myself) that they utter a short, sharp cry, 'like a baby crying.'"

8th. The decoy-man told me that when he last saw the Swans, on 31st ult. (*cf. supra*), they flew low over the decoy and settled on the river near a spot that we call "Snipe-corner," about a long mile below Thrapston by water. They made what he describes as "a hidjus nize," something like a flock of tame geese, and eventually waddled out of the river on to the flooded meadow, and began to graze; they allowed him to get within about 200 yards, when they took wing, and flew up the valley of the river. Two of the twelve had a good deal of grey about them. I heard from Mr. H. H. Slater, above mentioned, that he saw four Swans, of which two were grey, from the train near Ringstead yesterday. Wood Pigeons are carrying about building materials.

11th. I received a somewhat vague, but perfectly authentic, report of Swans, Geese, Gulls, and many Ducks on the flooded meadows below Oundle.

12th. Mr. W. J. Horn, in a letter received this morning, informed me that he visited Ravensthorpe Reservoir on 9th inst., and found between 400 and 500 wildfowl—Mallard, Teal, and Pochards—thereon; he also noticed two grey-mantled Gulls, and two birds which, from his description, must, I think, have been Divers, in all probability Red-throated. Capt. J. A. M. Vipan, of Stibbington, wrote to me, under this date, that on Jan. 24th ult. he observed fourteen Swans on the floods near Water Newton; he went down after them with punt and big gun, and found nineteen in two "lots" of eleven and eight respectively; the eleven would not let him get within 200 yards, but he could see with the glasses that they were "all certainly Bewick's Swans." He got a long shot at the other lot (amongst which he could detect some Mute Swans), and eventually secured two Whoopers and one Mute; one of the Whoopers weighed nearly 20 lbs. He adds that he was informed that there were about twenty Swans on the same spot yesterday morning (11th inst.).

13th. Four Swans seen near Ditchford Station L.N.W.R.

15th. Three Swans, "making a whooping noise," on wing near Achurch; reported by one of our gamekeepers.

16th. I heard from Capt. Vipan that he had seen nineteen Swans swimming on the floods above Wansford yesterday, but they had been so disturbed that they would not allow him to get near enough to make certain of their species; he adds that amongst the eleven Bewick's Swans seen by him on 24th ult. (*cf. supra*) there was one grey bird.

17th. The Song Thrushes are re-appearing in force after a nearly entire absence of about three months. Considerable passage of Peewits, Mallard, and a few Golden Plovers, to the north-east, observed near Lilford.

19th. Three "wild" Swans reported by our coachman near Aldwinckle.

23rd. Five Swans seen on wing near Aldwinckle.

28th. Mr. G. M. Edmonds, of Oundle, writes of having seen twelve Swans flying over his gravel-pit a few days ago; and our coachman reported that he saw six Swans this morning near Thorpe Waterville. One Goldeneye upon the decoy-pool.

MARCH.

1st. About half-a-dozen Common Gulls passed over Lilford to the south-west.—R. C.

3rd. Several Herring Gulls seen passing southward.—R. C.

7th. Mr. W. J. Horn, of Kingsthorpe, in a letter received to-day, tells me of having seen many Bramblings in a spinney near that place on 19th ult., also of return of Common Wagtail on 23rd ult., and many male Reed Buntings on 6th inst.; he also remarks the total absence of Grey Crows from the neighbourhood of Northampton.

9th. R. C., having heard of two Swans near Barnwell Mill, went down to have a look at them, and assures me that he could perfectly identify them as Whoopers.

11th. Three pairs of Barn Owls found in hollow elms near Lilford, but no eggs as yet laid by these birds.

20th. The first nest of Song Thrush reported to me, containing three eggs.

27th. A pair of Wood Pigeons in our aviary have two eggs in their nest in a box. The Bitterns in our aviary have been “booming” at night for several days past.

29th. First eggs of Peewit of the season brought in.

30th. R. C. made an exploring visit to the many hollow trees in the deer-park, and reports that almost every suitable cavity is tenanted by a pair of Stock Doves. He found a nest of Tawny Owl with three eggs, and two Barn Owls in another tree without eggs.

APRIL.

2nd. A very large flock of travelling Wood Pigeons seen near Wigsthorpe.

4th. Mr. Walter Stopford told me that on going to look at a nest of Stock Dove near Aldwinckle, in an old hollow willow-tree, he found one of the old birds, freshly killed and partly eaten, at the foot of the tree; and whilst he was climbing up to the cavity that contained the nest an old fox jumped from it. My nephews reported having seen a “large, slow-flying brown hawk” in the park, hotly pursued by Rooks; in all probability a Common Buzzard.

7th. Two nests of Barn Owl found in the park, containing respectively four and one eggs.

11th. A nest of Little Grebe found near Achurch, containing three eggs. I merely record this because, although this bird may be considered as abundant here during the winter months, this is the first occupied nest hitherto found in this neighbourhood, to my knowledge. A pair of Kingfishers nesting near Lilford. I much regret to add that some thief subsequently dug out and stole the eggs of this pair. Whimbrel and Redshank seen near our decoy.

14th. Lieut.-Col. C. I. Strong visited the heronry at Milton to-day, and informed me that he and his daughters counted about 130 nests, not, however, all occupied. Many young Herons could fly well, but some were still in the nests.

21st. First Partridge's eggs of season found.

28th. Many Fieldfares have been reported to me during the last ten days, and a very fine specimen was killed to-day.

29th. A female Starling in the aviary has paired with what (for want of a better name) I must call a Sardinian Starling, *Sturnus unicolor*. These birds have a nest and several eggs in a nesting-box.

30th. Well-feathered young Long-tailed Tits in a nest near the aviary.

MAY.

2nd. A female White-fronted Goose, paired with Bean gander, has four eggs at aviary-pond. Pochard sits upon six eggs at park-pond. An occupied nest of Barred Woodpecker was discovered in an old hawthorn-bush near Lilford. I am glad to add that a brood of five or six were safely reared and took wing from this nest.

4th. I received a letter from Mr. W. J. Horn, in which he assures me that he positively identified a Grey-backed Wagtail, *Motacilla alba*, at Kingsthorpe, on 30th ult. A very fine adult Gannet was brought to me by one Tilley, who informed me that it was caught by his dog on the roadside near Stanion on March 4th ult.; he stated that it was alive and in fair condition, and that he would not have killed it, "only I thought it was a Hershaw!" He sent the bird to be stuffed at Kettering by Mr. H. Field, who had informed me of the occurrence in March last.

13th. A nest of Little Owl in hollow ash-tree in the park contained several young.

27th. A Lesser Black-backed Gull, in adult plumage, hovered for some time over my pinioned Gulls in the kitchen-garden.

JUNE.

8th. Several broods of Partridges hatched out on 29th ult. reported to me to-day.

10th. A brood of Pied Woodpeckers have left the breeding hole in Lilford Lynch.

11th. House Martins, hitherto remarkable for their scarcity this year, swarming about the house at Lilford.

12th. A Sky Lark is sitting upon a nest full of eggs on a strip of grass of not more than four feet in width, between the high-road and foot-path near Achurch.

23rd. Mr. George Fitzwilliam sent me a curiously-coloured variety of Carrion, or possibly Grey Crow, stuffed, for inspection, with the information that it had haunted the park at Milton, Peterborough, for two years, and was shot in May last on account of depredations amongst poultry. This specimen has a dark brown head; the rest of the plumage is of a light buff or cream-colour, approaching to white on lower breast and belly.

24th. A Green Sandpiper was seen at Lilford Locks to-day.

29th. The decoy-man to-day reported to me that he had heard the call of a Quail near Tichmarsh on 3rd inst., and more than once since that day, in the meadows near the decoy.

Before bringing my remarks for June to a close, I must mention that in some very interesting notes sent to me by the Rev. H. H. Slater, who is now Rector of Thornhaugh, near Wansford, he alludes to the frequency and the nesting of the Grasshopper Warbler in that neighbourhood, in April and May of this year, and tells me that he heard and clearly identified a Wood Lark singing in a clearing planted with young larches, in Bedford Purlieus, on April 24th. In my experience, the Wood Lark is a rare bird in this county at any time of year, and this is the first occurrence that has come to my knowledge on undoubted authority for more than twenty-five years. The Grasshopper Warbler is (though not common in the immediate neighbourhood of Lilford) certainly much more abundant in our county than was formerly the case, as my next note goes to prove.

JULY.

7th. Mr. W. J. Horn, in a letter from Kingsthorpe under this date, informed me of the finding of several nests of Grasshopper Warbler, with eggs, not very far from Northampton.

15th. Several well-grown young Partridges picked up dead and dying, with large indurated lumps of clay attached to their feet.

20th. A very noticeable decrease in the numbers of Swallows and House Martins about Lilford.

22nd. Our gamekeepers report having constantly noticed a Hobby, during the last few days, about the park and neighbouring plantations. Curlews and Whimbrels heard at night, passing over one of our woods near Lowick, by a person well acquainted with the call of both species.

26th. Mr. W. J. Horn, writing under this date, informed me that Mr. W. Tomalin reported Ringed Plovers, Green Sandpipers, and young Common Sandpipers at Ravensthorpe Reservoir on 19th inst.

30th. I never remember to have seen Spotted Flycatchers in such abundance about Lilford as I did on this day.

AUGUST.

5th. I was delighted to see several Kingfishers about the river near Lilford. These birds, formerly abundant here, have been comparatively scarce since the winter of 1890.

10th. We noticed two large Gulls, that I have no hesitation in calling Black-backed, going over the pleasure-grounds at Lilford in an easterly course. One of the gamekeepers brought down two Brown-headed Gulls at one shot near Tichmarsh; one of them, only touched in the pinion-joint, is still alive in the aviary (April 19th, 1894). Very severe and prolonged thunder-storm in the early morning hours.

17th. Mr. Hill, of Wadenhoe Mill, informed me that he had recently been savagely attacked by a Little Owl in Wadenhoe churchyard. It is not a little remarkable that he should last year (July, 1892) also have been subjected to a similar totally unprovoked assault (*cf.* Zool. 1893, p. 93).

18th. Rooks unusually clamorous throughout the day. Temperature at sunset, 92° Fahr.

20th. Almost total disappearance of Swallows from about the neighbourhood of Lilford. Tawny Owls have been hooting

throughout the day for more than a fortnight past. A Kestrel lifted something from the lawn within twenty yards of me as I sat in the shade, but in full view of the bird.

21st. Under this date, Mr. W. J. Horn informed me that a Quail's nest containing nine eggs was "mown out" on a field of barley near Boughton, Northampton, on August 1st.

26th. The decoy-man reports the first Snipe of the season at the decoy-pool.

27th. A considerable flight of Wild Geese passed over Barnwell and Aldwinchle between 12 and 1 p.m. My informants were respectively Mr. H. Wickham and one of our gamekeepers, and from their reports of the cries and the size of these geese, I have not a doubt that they were Grey-lags. Several Curlews seen by the gamekeeper just referred to.

30th. A large slow-flying bird of prey reported by the falconer as passing near the house at Lilford, hotly pursued by Rooks. From his description, and one given by Lady Lilford, who saw this bird on the next day, it must, I think, have been a Honey Buzzard. The decoy-man to-day reported having seen the first Teal of the season on the decoy-pool yesterday.

SEPTEMBER.

1st. Mr. R. Stockburn, of Kettering, most obligingly despatched a young Quail, shot by him near Loddington to-day, to me.

2nd. I recognised distinctly the cry of a Tern high in air above my boat, but could not see the bird. The falconer positively affirms that he saw four Redwings to-day on Pilton. The hawberries are in great profusion, and as "forward" as they generally are in the first fortnight of October, affording very welcome sustenance to all Thrushes. My son told me of seeing an "old blue Falcon" stoop at a Partridge near Tichmarsh to-day.

6th. Appearance of Swallows in great numbers (*cf.* August 20th, *supra*).

10th. First report of Grey Wagtail for the season, at Lilford Locks.

12th. Col. C. I. Strong sent me a young Ruff, in the flesh, shot by him in Whittlesea Wash a day or two ago.

13th. Swallows and House Martins in swarms about the house at Lilford.

16th. Having of late heard many reports of the scarcity of

Goldfinches, from various parts of the county, I was glad to see several "charms" of these beautiful little birds about a fine crop of thistles on what ought to be a pasture field on one of our farms to-day.

20th. First report of Merlin for the season.

24th. House Martins, which were swarming about the house yesterday, have nearly all departed this morning, leaving many Swallows with us.

25th. Mr. F. W. Holland, of Eydon Hall, most kindly presented to me a very fine male Red Grouse, stuffed, with the information that it was shot near Warkworth, in this county, in November, 1892, by a person with whom he is acquainted. I am indebted to Mr. O. V. Aplin for the first intimation of this occurrence—unique, as I believe, in Northamptonshire. First Wigeon of the season reported on our park-ponds.

OCTOBER.

3rd. First report of Grey Crow for the season.

6th. I received a very young Dotterel, in the flesh, from the Rev. W. Hopkinson, with the information that it was one of two killed two days ago on Castor Field by a Mr. Hunt. These two birds rose from a "stale tilth," and were the only two of the species seen. The other was sent to Burghley House, where it was declared to be a young Golden Plover, and as I subsequently learned, eaten with satisfaction as a "Short-billed Woodcock"! The specimen sent to me was unfortunately too far "gone" for preservation. Mr. W. Tomalin, in a letter received to-day, informed me that two Quails were shot at, and missed, near Hackleton on 4th inst.

8th. A large flock of travelling Wood Pigeons about the beeches at Lilford.

10th. I heard notes of Brambling for the first time this season at Lilford. Vast flocks of Peewits passing to the westward.

17th. First report of Woodcock for the season, at Clapton.

19th. I noticed a large number of Redpolls about our pleasure-grounds.

21st. A large flock of Geese passed over Wadenhoe to the south-west. A lady who was staying with us assured me that a pair of Rooks have a nest, and in all probability eggs therein, near Thorpe Station. First report of Fieldfare for the season.

27th. I noticed Mistletoe and Song Thrushes in very unusual numbers feeding upon the berries of the Irish yew in the terrace-garden at Lilford.

30th. An immature female Great Crested Grebe shot near our decoy.

NOVEMBER.

2nd. The falconer reported a great passage of Sky Larks during the last few days. Two Swallows seen at Weekley by Mr. G. Charlton.

9th. Mr. E. C. Burton, of the Lodge, Daventry, was kind enough to send me a fine pair of Eared Grebes, stuffed, with the information that they were shot upon Daventry Reservoir in 1869. This is the only occurrence of this species in our county that has come to my knowledge. In the case containing these Grebes was a fine Sheldrake, also killed on Daventry Reservoir.

10th. First Jack Snipe of season shot near Tichmarsh. Three immature Goldeneyes shot in the same neighbourhood.

11th. Ten Golden Plovers seen passing over Aldwinckle.

16th. Mr. E. C. Burton sent over for my inspection three cases containing the following species, all killed at Daventry Reservoir:—Ringed Plover, Grey Phalarope, Green Sandpiper, Common Tern, Black Tern, Great Black-backed Gull, a pair of Goosanders, and a Cormorant. The only dates given refer to the Gull and the Cormorant, of which the former was killed on May 13th, 1839, and the latter on March 31st, 1891. Mr. Burton was good enough to present me with these two birds. Mr. B. Wentworth Vernon wrote informing me of the existence of a small heronry, of which I had not previously heard, at his place, Stoke Bruerne Park, near Towcester. Mr. Wentworth Vernon, in a subsequent letter, informed me that about two years ago two large Eagles were soaring over his park and the neighbourhood for several hours.

24th. Whilst we were sitting at luncheon, about 2 p.m., I heard my two tame Ravens making a great uproar close to the front of the house, and on looking out of window I perceived that they had got hold of a Peregrine Falcon, and had nearly killed her. I sent out a servant, who brought in the Falcon, a bird of (as I believe) the third year, in bad condition, and dying, not only from injuries received from the Ravens, but also from the dire

disease known to falconers as the "croaks." This falcon showed no signs of being trained, or of having ever been in captivity.

26th. I received from Mr. H. Tresham, of Peterborough, a young Puffin that was picked up in Thorney Fen a few days ago. I am glad to say that we have kept this bird alive and well here for nearly five months.

DECEMBER.

9th. The gamekeepers report many thousands of Wood Pigeons about our old oak-woods, in which there is an extraordinary crop of acorns. The Wadenhoe gamekeeper, to give some idea of the numbers of these birds, sent me word that they are as "five to one in the French war year," 1870-71, when we had more Pigeons than in any other season in my recollection.

11. Mr. W. Tomalin was good enough to send me a Mealy Redpoll alive, with the information that it was recently caught by a Northampton birdcatcher near Roade. The falconer to-day reported that on 9th inst. two Swans passed over Lilford in a southerly direction, loudly trumpeting as they flew.

14th. Eighteen Geese reported as passing over Thorpe Waterville.

18th. "More Wood Pigeons than ever in the oak-woods," reported by many persons.

21st. Mr. Walter Stopford shot and sent to me, in the flesh, a very beautiful, nearly pure white, variety of Redwing, of which he had been in pursuit for the last two or three days, in the neighbourhood of Tichmarsh. The head of this bird showed an approach to the normal colour; there were a few pale brown feathers among the lesser wing-coverts; all the rest of the plumage a creamy white; beak of the normal colour; legs and feet pale flesh-colour. This bird kept company with a small flock of Fieldfares.

24th. A very great diminution in the number of Wood Pigeons reported by our shooting parties. I am informed by everyone about Lilford that there is a very unusual abundance of Fieldfares in the neighbourhood.

27th. The Aldwinckle gamekeeper tells me that an old blue Falcon has been "drilling" the Wood Pigeons about our woods for some time past.

I append, for what they may be worth, dates of first reports

of arrival of spring migrants for 1893. These dates, with one specified exception, refer to the immediate neighbourhood of Lilford:—March 20th, Chiffchaff; 21st, Wheatear; 27th, Bank Martin. April 1st, Willow Wren; 2nd, Ray's Wagtail; 5th, Redstart and Blackcap; 7th, Nightingale, Swallow, and Tree Pipit; 11th, Whimbrel and Redshank; 14th, Sedge Warbler, Cuckoo, and Wryneck; 16th, Whitethroat, Lesser Whitethroat; 17th, Grasshopper Warbler (Thornhaugh, near Wansford); 18th, Corn Crake; 19th, Wood Warbler and Whinchat; 22nd, Reed Warbler and Turtle Dove; 26th, Garden Warbler; 27th, Red-backed Shrike and Spotted Flycatcher. May 1st, House Martin; 13th, Swift and Common Sandpiper; 28th, Hobby.

NOTES AND QUERIES.

MAMMALIA.

The Badger: its period of Gestation.—The following account of the breeding of Badgers may throw some light on the subject of their period of gestation. In the beginning of April, 1880, we dug out three Badger cubs in Kent. They were then about the size of Wild Rabbits. They became very tame, and would follow us about anywhere, even along the roads, but always resented being picked up, although they would climb into our laps. They were fed on rabbits, birds, biscuit, and ate enormous quantities of Wasp-grubs, eating the combs as well as the grubs. They used also to procure numerous beetles and worms for themselves. Towards the end of August of the same year we moved them to my present home in Hampshire. By that time they had greatly grown and were fine Badgers, the three together weighing 39 lbs.; one of them being much smaller than the other two. They were temporarily placed in a pigsty, but soon made their escape, and were lost for some days, when we discovered that they had taken up their abode in a wood-lodge that was filled with wood and faggots. They used to come out every evening to feed with the dogs, and would run at them and try to knock them over by putting their noses under them and lifting them up, but never tried to bite. At night they wandered far away, but would come when I called them from a long distance and put their paws on my knees; and on one occasion one of them, without any provocation, quietly gave my knee a good nip. During the end of September and the whole of October they were exceedingly noisy; one of them was continually chattering, and another uttering a loud drawling cry, which I have heard before in the autumn

from wild Badgers. About this time the small one disappeared, and the other two lived all the winter in the wood-lodge, having, as we could see, carried in quantities of grass and bracken, the latter from some heaps of small potatoes over which it had been thrown to keep out frost. Numbers of potatoes were also carried away, but were never eaten. They did not regularly hibernate, but sometimes did not show for several days. After a fall of snow I tracked one of them a very long way to a sand-pit, where there was a fox-earth. About the middle of March, 1881, we distinctly heard young ones whining and chattering in the recesses of the wood-lodge, and did not see either of the old ones for a fortnight, when the female came out. She was very hungry, and wonderfully quick and active. She had a smooth appearance about her head, and her hair looked thin, reminding me in fact very much of a Ferret or Polecat under similar circumstances. She came out every evening, and we could hear the young ones continually. All this time we had lost sight of the male, and I had to leave home for a fortnight, so for all that period I do not know what happened. On my return home there was no sign of young ones; all was quiet, and only the old female was seen. She used to come in the evening from the other direction, and I traced her to the sand-pit about three quarters of a mile off. She was always in a great hurry, but as tame as ever, and she used to surprise me with the way she used to spring up a very steep bank. She would go the round of all the dog-kennels for any scraps they might have laid up, each dog always turning out for her. Now comes the sad part of the story. My gardener told me that while I was away he had heard a noise in the wood-lodge like a chain rattling, so I decided to get all the wood out. This was done, and we came on two large nests, right at the end of the lodge, and by one of them lay the male Badger dead, entangled in the wood by the chain of a gin that the poor fellow had on his foot. He smelt dreadfully, and this was of course the reason of the female moving her young away. Now as these Badgers had young by the time they were twelve months old, it cannot be said that twelve months is the usual period of gestation. The noisy period in October was probably the time when the female was in season, and if so, it would seem that four to five months in this case was the period of gestation. Is it not possible, that when a female Badger is caught when in litter, the development of the foetus may be suspended until she gets over the shock of her capture? To return to my story. The old female continued to visit us during the summer, but towards autumn her visits became fewer and fewer and at last ceased. All that now remains is a thriving colony of Badgers in the sand-pit to which she originally moved her young.—E. G. MEADE-WALDO (Rope Hill, Lymington).

Destruction of Martens in Ireland.—In his article on the Marten in Ireland (p. 141) Mr. Barrett Hamilton gives "an extract from a law"

which he supposes to be "still in force in Ireland," and which provides a reward of 5s. to any person or persons who shall take, kill, or destroy any Otter or Marten. He refers evidently to Section 14 of 27 Geo. III. cap. 35, but he, and doubtless many others, will be glad to learn that this enactment is no longer in force, having been repealed by 3 & 4 Will. IV., cap. 78, sec. 64.—J. E. HARTING.

Bank Vole in Worcestershire and Shropshire.—During the months of February and March I trapped the Bank Vole freely in the Wyre Forest, which covers a considerable area of both these counties. It has been recorded once before in Shropshire (Zool. 1888, p. 184), at Eyton, some thirty miles distant, but, to the best of my knowledge, not in Worcestershire. If more naturalists would pay attention to the distribution of the mammals within their districts, this species would probably prove to be far from rare, if occasionally somewhat local.—J. S. ELLIOTT (30, Dixon's Green, Dudley).

Water Vole at a distance from Water.—On March 16th a man here showed me a Water Vole which he had just taken out of a mole-trap. The trap was set in a field situate about half-a-mile from the nearest water where Water Voles are found.—E. W. H. BLAGG (Cheadle, Staffordshire).

[The habit of the Water Vole to wander occasionally to some distance from water was remarked long ago by Gilbert White. In his 26th letter to Pennant he writes:—"As a neighbour was lately ploughing in a dry chalky field, far removed from any water, he turned out a water rat that was curiously laid up in an *hybernaculum* artificially formed of grass and leaves. At one end of the burrow lay above a gallon of potatoes regularly stowed, on which it was to have supported itself during the winter. But the difficulty with me is how this *Amphibius mus* came to fix its winter station at such a distance from the water. Was it determined in its choice of that place by the mere accident of finding the potatoes which were planted there; or is it the constant practice of the aquatic rat to forsake the neighbourhood of the water in the colder months?" In a previous letter (the 10th to Pennant), White suspects there may be two species of Water Rat, and gives reasons for this opinion.—ED.]

Stoats in Ermine Dress.—With reference to my note upon this subject (p. 148) it may be worth while drawing attention to the fact that Pennant ('British Zoology,' 1776, vol. i., plate 7) figures a Stoat in intermediate pelage. In this specimen the white of the belly extends part of the way up the sides; the basal half of the tail has become white, as has also the hind leg and most of the fore leg. It is a very fair representation of the manner in which the change takes place. Pennant writes (p. 91), "With us [in Flintshire] the Stoat is observed to change its colour from brown to white in November, and to begin to resume the brown the beginning of March."—O. V. APLIN (Bloxham, Oxon).

BIRDS.

Early arrival of the Cuckoo in 1894.—In spite of the rather dogmatic assertion of the Editor (p. 189) that “in no instance, so far as he is aware, has the Cuckoo been heard or seen (by any competent observer) before the 6th of April,” I must beg to record my humble testimony on the point, leaving others to judge, as may seem good to them, of my competency. On April 1st of this year, 1894, two of my sons reported to me that they had both heard and seen a Cuckoo; as both of them are, in my judgment, competent observers, I did not doubt their accuracy, and the next day, April 2nd, I myself had the pleasure of hearing one repeatedly. This date is no doubt, in my own experience of, now going on I am sorry to say for sixty years, exceptionally early,—the earliest in fact that I have ever recorded. It may interest some naturalists if I add here the dates of the first hearing or seeing, or both, of the Cuckoo which I have recorded since 1866. In some years I made no record, being perhaps away from home, or otherwise unable to believe that the first time I heard or saw a Cuckoo was any real or approximate date of its first arrival here:—1867, April 18th; 1868, 14th; 1869, 9th; 1870, 13th; 1871, 12th; 1872, 13th; 1873, 13th; 1887, 14th; 1891, 19th; 1894, 1st. The latest date at which the Cuckoo is heard is also, it seems to me, a point of interest. On this I have the following notes:—“July 3rd, 1891. Heard three Cuckoos this evening; one quite hoarse. July 5th, 1891. Heard one again to-day.”—O. P. CAMBRIDGE (Bloxworth, Dorset).

[The Editor's statement to which our valued correspondent takes exception was actually published nearly twenty years ago, *i. e.*, in 1875, in ‘Our Summer Migrants.’ We do not know why it should now be characterized as “dogmatic,” seeing that it is confirmed by the observations of Mr. Borrer, extending over more than thirty years, as made known by him in 1891 in his ‘Birds of Sussex,’ and by the deductions of Mr. Southwell (p. 190) from records kept for the much longer period of 106 years. Moreover, even now, no date earlier than April 9th is adduced by Mr. Cambridge (except that noted for the present year), while the average for the ten years’ observations given by him is from the 12th to the 13th of April.—ED.].

Cuckoo seen in March.—Like other correspondents (Zool. 1894, p. 189), I am no believer in the March Cuckoo. I have regularly taken notes of its first appearance, and in thirty-one years, between 1863 and 1894, the earliest date that I have heard it in North Lincolnshire was on April 14th (1869), the latest, May 1st (in 1873). The earliest date I have ever heard it in England was April 8th, 1894, at Tunbridge Wells.—JOHN CORDEAUX (Great Cotes House, R.S.O., Lincoln).

Early laying of the Cuckoo.—It may be interesting to note the early laying of the Cuckoo this year in Somersetshire. My son took an

egg on April 28th, in the nest of a Robin. — H. S. B. GOLDSMITH (Bridge-water).

Variation of Plumage in Cuckoo.—*Apropos* of the question of March Cuckoos, Mr. Southwell, in the last number of 'The Zoologist,' states that the "few particulars given have always appeared to indicate the plumage of the young bird, an obvious absurdity." Without any disrespect for so high an authority, I should like to mention some facts that have fallen under my own observation; once (some three or four years ago) in Epping Forest; and again, only last week, on a certain moor some twelve miles from Whitby. Cuckoos abound there this year. On the morning of May 14th two Cuckoos flew close past me. Noticing something curious about one of them, I marked them down in a bare patch in the ling, and crawling within about fifty yards of them, I had just time to get my glasses focussed upon them, when they were disturbed by one of the moorland sheep, and disappeared down a gully. For the short space that I had them under observation, I was able to see distinctly that one was in the normal plumage, and the other, which had its back towards me, was in all respects *marked precisely like a young bird of the year*. I was unable to note the colour of the flanks and under parts, as also the colour of the irides. On returning home, and looking up the literature on the subject, I find in Yarrell (ed. 4, vol ii., p. 407) notice of "certain examples, presumably young, which put on a plumage very different from that generally assumed and which have been described under the name of *Cuculus rufus*." Whether the bird seen by me was one of these, or a variety, I am unable to say; I merely mention facts as I observed them; but taken in connection with Mr. Southwell's remarks, these birds certainly bear a close resemblance to a female Kestrel, and the thought occurred to me, that when putting down all early Cuckoos as Kestrels, the possible occurrence of this species or variety, whichever it is, should be taken into consideration.—OXLEY GRABHAM, M.A. (Croxton Villa, Scarborough).

[We understand Mr. Southwell's remarks to mean that in certain cases, where the early appearance of *supposed* Cuckoos has been reported, the description of the plumage given by the observer has pointed either to the Kestrel, or to a Cuckoo in the immature reddish brown barred plumage, which *so early in the spring* (he considers) would be an impossibility, or, as he puts it, "an obvious absurdity." This raises the question whether the Cuckoo ever retains the immature plumage until its second year. We have no doubt that it occasionally does so—it misses a moult, just as trained falcons are occasionally observed to do—and the following remarks in 'The Birds of Middlesex' (1866, p. 120) are to the point:—"Occasionally an adult Cuckoo is obtained in the reddish brown plumage peculiar to the young bird, but this happens very rarely. I know of two instances in which old birds have been shot in this state of plumage, one

having been previously observed for three summers, and the other for five or six; they were both females, and I believe an adult male of this colour has never been obtained. The adult brown Cuckoo is thought by some to be a distinct species, and has been figured and described under the name of *Cuculus hepaticus*." If our memory serves us, for it is a good many years since these remarks were penned, the two examples of adult brown Cuckoos above mentioned were shot by that excellent field-naturalist, the late Frederick Bond, and were long preserved in his collection.—ED.]

Black Redstart in Kent.—On March 26th I saw a Black Redstart, *R. tithys*, near the village of Wye. It flew up from the side of the road, and perched on the roof of a cottage close by. It was apparently a young bird in the uniform slaty-grey plumage.—J. H. CATON HAIGH (Aber-Iâ, Penrhyndeudraeth, Merionethshire, North Wales).

Dark Variety of the Barn Owl.—A very dark buff-coloured variety of the Barn Owl, *Strix flammea*, was brought to Mr. Pratt, the taxidermist at Brighton, on October 24th, 1893. It was caught in a barn near Brighton, and proved to be a female. It must not be forgotten that there is a fulvous or dark race of our Barn Owl, which I have occasionally seen (*cf.* Zool. 1880, p. 43; 1885, p. 52); but the present example is still darker, especially on the back. Dr. Sharpe, in his study of the Barn Owls, confirms the general opinion that any very fulvous Barn Owl is a migrant from Denmark, where this dark race or species preponderates. The example now referred to closely resembles one which I lately saw in Mrs. Dawson Rowley's collection, which is figured in the 'Ornithological Miscellany,' vol. i. p. 62. This also was caught at Brighton. Writing from memory, there is one in the Norwich Museum darker and more richly coloured than either of these. This was taken on our east coast in December, 1864, and is alluded to in Stevenson's 'Birds of Norfolk.' Whether these dark owls can ever be maintained as a species is doubtful, and that certainly was not my father's opinion, nor is it Dr. Sharpe's, in spite of the immense difference between the extremes of the two phases in respect of colour.—J. H. GURNEY (Keswick Hall, Norwich).

Short-eared Owl on Northumberland Moors.—With regard to certain remarks which I made in 'The Zoologist' for March (p. 114), in reference to the visitation of Short-eared Owls to certain Northumberland moors, I may state that on the moors referred to they are not now present. The voles having disappeared, the owls have apparently followed suit. The keeper told me he had found several dead owls, and he attributed their death to want of food, in other words, scarcity of mice; apparently a certain area of moor has only a limited number of mice on it, insufficient to maintain an indefinite number of owls.—A. C. CHAPMAN (Moor House, Leamside).

Pheasant nesting in a tree.—A hen Pheasant was recently found sitting upon ten eggs in a Pigeon's nest in a fir-tree at about six feet from the ground, in a covert on my brother's shootings near Barnwell, Northampton.—T. M. WICKHAM.

[It would be interesting to know whether the eggs were duly hatched, and how the young birds were brought down ; for, as stated in the 4th ed. of 'Yarrell' (vol. iii. p. 99), lofty situations, such as old nests and squirrel's dreys in trees, are sometimes selected by Pheasants, but the entire brood is rarely brought down in safety.—ED.]

Hooded Crow breeding in Northumberland.—It may interest readers of 'The Zoologist' to know that the Hooded Crow, *Corvus cornix*, has bred for some years in the neighbourhood of Cheviot in Northumberland. The text-books, as a rule, define the border-line between England and Scotland as the normal southern limit of breeding-range of this crow in this portion of our islands, and as it is well known how commonly the Hoodie breeds in southern Scotland, there is nothing extraordinary in its breeding in Northumberland. In 1890 a friend of mine told me he had seen a pair of Hooded Crows at a nest on his shooting near Cheviot, and that at the same time certain young crows were fledged and flying about close at hand. These young birds, which could fly only a short distance without alighting, were close to a certain nest from which young birds had recently flown, and the two old crows in attendance were both Grey-backs. The young crows, on the other hand, my friend told me, were all *quite black* and *not hooded* ! Last year (1893) a pair of Hooded Crows again bred close to the same old nest, and the keeper shot one of the old ones off the nest, which contained small young newly hatched. This spring a pair of Hoodies have again nested close to the same old place. It may be added that Carrion Crows are also exceedingly common in this region, although they are being rapidly put down, owing to the havoc these birds work in any district where game is preserved. The place where the Hooded Crows, above mentioned, breed is within a very few miles of the Scottish border, and ordinarily one would attach no importance to it, save for the purposes of county ornithology.—ALFRED C. CHAPMAN (Moor House, Leamside, Co. Durham).

The White Wagtail in Anglesea.—While staying at Rhos Neigr, a small village on the west coast of Anglesea, from April 28th to May 2nd, I noted many Wagtails, some in small flocks and some in pairs, both on the shore and on the banks of Llyn Maelog, which is close to the sea. All of these were *Motacilla alba*, but I could not make out that any were actually breeding. Further inland, on May 2nd, *Motacilla lugubris* was the species I observed.—W. HENRY DOBIE (Chester).

Marsh Harrier nesting near Oxford.—Some years ago I purchased from Mr. Leonard Buttress, of Westbridge, Hendon, an egg of the Marsh

Harrier, *Circus æruginosus*, which he himself took near Oxford in July, 1890. The interest attaching to such a specimen induced me to write Mr. Buttress for further particulars concerning the egg, and in reply he stated that so far as he could remember the nest was situated on the ground, and composed of a quantity of dry vegetation, which he thinks was chiefly reeds. I do not think any other instance of the Marsh Harrier breeding in the above-mentioned district has been recorded for a number of years, or, perhaps, if we except Norfolk, from any other locality in the British Islands, so that the present instance is of more than ordinary interest. The egg itself is now in the British Collection in the Natural History Museum at South Kensington.—H. K. SWANN (Forest Grove, Colville Street, Nottingham).

Notes from Hastings.—On February 4th I picked up an immature Puffin at Pett Level, near Hastings. It had been thrown up by the tide. Also a Gannet in the same way, on February 19th. The weather had been very stormy. On March 21st I had sent me an adult male Brambling, shot near Fairlight while feeding with sparrows near a rick. On April 1st a friend and I saw a Hoopoe in the marshes at Iden, near Rye, Sussex, and I have since heard of one being shot at Lydd, Kent, which is only a few miles away. On April 10th I saw, in the flesh, a male Black Redstart, shot at Ninfield, near Bexhill; it was a bird of last year I should think, as the white bar on the wing was not strongly marked. It is now in my possession. On April 23rd a friend of mine at Ore, near Hastings, took a Hawfinch's nest containing four eggs; and a Goldcrest's nest, with ten eggs, was taken at Battle.—G. W. BRADSHAW (Hastings).

Lesser Redpoll breeding in Somerset.—On the 15th inst. I saw some eggs of the Lesser Redpoll, *Linota rufescens*, Vieillot, taken at Kilve, near Bridgewater. Two eggs were shown to me by the finder, who did not know what they were; there were four eggs in the nest, and I immediately went to get the other two, but found unfortunately that they had been taken and part of the nest pulled out.—H. ST. B. GOLDSMITH (Bridgewater).

[The late Mr. Cecil Smith thought the Lesser Redpoll did not breed in Somersetshire. He regarded it as a winter visitor, appearing in October and staying until about the middle of March.—ED.]

Eggs of the Tree Sparrow.—Several years ago Mr. C. M. Prior called attention to the fact that the Tree Sparrow always lays one egg very much lighter in colour than the rest of the clutch. The other day a Tree Sparrow's nest, with five eggs, which I found in this parish in a hole in an ancient crab-apple tree, recalled the matter to my mind, and the light-coloured egg in the first Tree Sparrow's nest I ever found, just twenty years ago. Four of the eggs found this month were olive-brown, with suffused markings, and darkest on a zone round the biggest part of the egg; these had a resemblance to some dark eggs of the Sky Lark. The fifth egg had the

ground-colour white, with heavy suffused brown markings at the big end, darkest on the zone mentioned before; the rest of the egg was marked with ashy grey spots. My small experience leads me to believe that this remarkable light-coloured egg is always present, having observed it on every occasion when I have found or examined a clutch of Tree Sparrow's eggs. I should be glad to hear the experience of other observers on the point, as (except in the 4th ed. of Yarrell) I cannot find anything bearing upon the question in the books on British birds and the local avifaunas I have by me. The subject is thus referred to in Yarrell;—"When the markings are collected in large masses other splotches of ash-colour may be seen on the very apparent white ground, and in most nests of this species there is one egg of this character, whatever be the pattern of the rest" (vol. ii. p. 84). But I think the passage hardly does full justice to this remarkable feature in the life-history of the Tree Sparrow, which is perhaps unique in the history of our British passerine birds.—O. V. APLIN (Bloxham, Oxon).

REPTILIA.

English Records of *Coronella austriaca*.—Mr. Boulenger's remarks on the variation of the Smooth Snake, *Coronella austriaca* (pp. 10–15), and his allusion to the fact of its having been first noticed as a British species in the pages of this Journal (1859, p. 6731), suggested the utility of collecting all the references to it which have since appeared in 'The Zoologist.' They are accordingly appended, and it may be noted that in the same year in which Dr. J. E. Gray made known the discovery of this rare or at least local snake in this country, he announced the fact also in the *Annals of Nat. Hist.* (1859, p. 317):—

Gray	...	...	...	1859, page 6731.
Bond	...	...	...	1859 „ 6787.
Newman	...	...	...	1862 „ 8199.
Dr. Opel	...	...	...	1865 „ 9505, 9559.
Blackmore	...	...	...	1865 „ 9724.
Newman	...	...	...	1869 „ 1653.
Cambridge	...	...	...	1872 „ 3113.
Kemp Welsh	...	...	...	1872 „ 3150.
Corbin	...	...	...	1876 „ 4884.
Cambridge	...	...	...	1879 „ 462.
Ridley	...	...	...	1882 „ 433 (Surrey).
Macpherson	...	...	...	1882 „ 434.
Axford	...	...	...	1883 „ 84.
Ridley	...	...	...	1883 „ 129.

To these references may be added:—'Intellectual Observer,' vol. iii., p. 149, and O. P. Cambridge, *Proceedings Dorset Nat. Hist. Soc.*, 1886, p. 84, pl. vi. Bell's 'British Reptiles' having been published in 1837, before *Coronella austriaca* had been ascertained to exist in the South of England, that author's only reference to this species is an allusion to its supposed occurrence in Dumfriesshire, a supposition which, as Mr. Boulenger has

shown (p. 10), was founded upon a mistake in the identification of the species. In Dr. M. C. Cooke's little volume, 'Our Reptiles,' *C. austriaca* is described as British, and a coloured figure is given of the species from a specimen obtained in Hampshire.—J. E. HARTING.

FISHES.

Blind Gudgeon.—In a small pond near Scarborough are to be found great numbers of Gudgeon, *Gobius fluviatilis*; nice, well-fed little fish, perhaps somewhat under-sized, but almost all of them *blind*. This peculiarity has puzzled me for a long time, as it is not odd fish which are thus afflicted, but about ten out of every dozen examined. I have also been struck with a peculiarity in the pond—that even in the hottest and driest period of last year the water did not dry up or diminish to any perceptible degree. On causing enquiry to be made, I am informed that a subterranean lake exists, having an outlet into the pond, which thus always maintains the same level, independent of climatic changes. It has been suggested to me that possibly the Gudgeon inhabiting the pond may have been bred in the subterranean lake, which would probably in the course of generations lead to the loss of sight, the fish then finding their way upwards into the pond. I should be glad to know if this is a probable explanation, and if so, what food-supply would the fish find underground? I would add that numbers of Newts inhabit the pond, all of which appear to possess full powers of vision.—WILLIAM J. CLARKE (44, Huntriss Row, Scarborough).

Sapphirine Gurnard in the Solway Firth.—The Sapphirine Gurnard, *Trigla hirundo*, Linn., may now be added to the fauna of the Solway Firth, for several specimens have been taken in our waters this spring. The largest that has hitherto come under my notice was a female fish weighing 3¾ lbs. It was caught on the Firth on May 19th, and proved to be full of roe. The maturity of the specimen was further evidenced, as we ascertained on dissection, by the form of the air-bladder. I had some reason previously to suppose this species visited our waters, but had not obtained any specimens.—H. A. MACPHERSON (Carlisle).

[We are not surprised to hear of the occurrence of this fish in the Solway Firth, for although not so plentiful as the Red Gurnard, *Trigla cuculus*, it is to be found all round the British coasts, and is widely distributed, being known from Norway to the Mediterranean.—ED.]

The Bergylt, *Sebastes norvegicus*, on the Norfolk Coast.—Mr. A. Patterson sent me a beautiful specimen of this pretty fish, for the Norwich Museum, measuring 5¾ inches in length, which had been taken off Yarmouth, in a shrimp-net, on April 29th. I am not aware that this fish has been recognised as occurring on the Norfolk coast previously, and as it is believed to be an inhabitant generally of "rocky bays, where the

distance to the bottom is very great" (Day), it must have been very much out of place in the sandy shallows fished by our shrimpers.—T. SOUTHWELL (Norwich).

Lumpsucker at Penzance.—A specimen of the male or Red Lump-sucker, *Cyclopterus lumpus*, was caught close to the pier-head here, in a trammel, on May 2nd. The late Mr. T. Cornish considered it a rare species on this coast, having seen only one specimen in thirty-four years. The Blue form, or female, is not so uncommon. I saw a specimen, caught in deep water near the Wolf Rock, on February 26th last.—JOHN B. CORNISH (Penzance).

MOLLUSCA.

English Oysters for South Africa.—From a report to hand in the 'Cape Times' it appears that active steps have been taken to introduce English oysters to these shores, a consignment of some 2000 Whitstables having been brought out in the 'Norham Castle.' These have been placed at the mouth of the Swartkops River, Algoa Bay; Mr. Weatherly, the Cape Government fishery expert, has been detailed to watch the progress of the experiment, and so far all goes well. There is, however, still a great deal to be done and learned before satisfactory progress can be made towards the establishment of oyster-culture as a *bonâ fide* industry, able to pay its way. Even though all the rocks and rocky points of the Swartkops River abound in the native South African oyster, it was not at the commencement of the experiment known at what time of the year the native oyster spawned. This, however, has now been decided, for the whole of January the oysters were spawning, and it was quite easy to gain the spawn for microscopic examination. About 800 of the Whitstable oysters arrived alive after their long journey, and these were placed in the water in trays and closely watched. No syndicate is likely to spend money in the development of an industry that will become a valuable property, without ample protection, and this it is now endeavoured to secure. Application has been made for a protection right over the whole of the river-mouth, not, it is carefully explained, that the whole will ever be required, or that it will ever be necessary to use all this, but since the work is at present experimental, it is thought advisable to have as wide a protection as possible, so that the place may be taken where it is found that the work can be best carried on. There is, however, very little doubt that the selected area for the oyster-beds will be a strip of the rocky north bank extending from the mouth for a quarter of a mile up the river. The actual oyster-beds will be no impediment to rowing or sailing anywhere over the surface of the water, and if ever the largest possible success attends the scheme, and the banks should be conserved for three-quarters of a mile, there will be still over ten miles of the better parts of the river fishable.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 3rd, 1894.—Prof. STEWART, President, in the chair.

Mr. J. H. Burkill was admitted, and Dr. Johann Mueller, of Aargau, and Prof. K. Mitsukuri, of the University of Tokyo, were elected Foreign Members of the Society.

Prof. Poulton exhibited the larvæ of certain Lepidoptera to illustrate the results of experiments which he had made in regard to the influence of environment upon their colours. Various coloured twigs and shoots, such as occur in nature, were shown to influence the appearance of many twig-like larvæ in such a manner as to aid their concealment. Commenting upon this exhibition, Mr. A. E. Gibbs detailed the results of feeding the larvæ of *Amphidasys betularia* on birch which has brown shining stems, and on an acacia the petals of which are of a green colour, the larvæ in these cases being brown and green respectively.

Prof. G. B. Howes exhibited and made remarks upon the eggs and young of *Ceratodus fosteri*, received from Prof. Semon, of Jena, who is engaged in working out the development of this fish. Prof. Howes also exhibited a specimen of *Lepidosiren paradoxa*, an extremely rare fish in collections, from the backwaters of the Upper Rio Paraguay, and made remarks upon its anatomy.

Mr. James Saunders, of Luton, with the aid of the oxyhydrogen lantern, exhibited *Plasmodium* in the act of forming sporangia. The species, which had been found on birch, was *Didymium squamulosum*.

On behalf of Dr. H. B. Guppy, the Secretary read a paper on the habits of three species of *Lemna*. In this paper, the author detailed the results of experiments made by him during a period of twenty months, and showed that *Lemna gibba* can pass the winter either in the gibbous form, or with fronds which in appearance come to resemble those of *Lemna minor*. The flowering of *Lemna gibba* was observed in July, when it was found that the gibbous plants were producing thin flat fronds, which were also in flower and floating detached. In both cases the flowers were hermaphrodite, but they had the appearance of being unisexual, on account of the flowers of the gibbous plant protruding the pistil only, while those of the flat fronds evolved only the stamens. After describing the habits of the winter fronds of *Lemna polyrrhiza* and alluding to *Lemna minor*, the paper concluded with a table of temperatures relating to the germinating, budding, and flowering of these plants.

A paper was then read "On the fertilization of certain Malayan Orchids," by Mr. H. N. Ridley.

May 24th, Anniversary Meeting.—Prof. STEWART, President, in the chair.

Messrs. G. B. Rothera and W. Frome Wilkinson were admitted Fellows of the Society.

The Treasurer presented his Annual Report, duly audited, and the Secretary having announced the elections and deaths during the past twelve months, the usual ballot took place for new members of Council, when the following were elected:—Dr. John Anderson, F.R.S., C. B. Clarke, M.A., F.R.S., Prof. J. Reynolds Green, Arthur Lister, and Albert D. Michael.

On a ballot taking place for the election of President and Officers, Mr. Charles Baron Clarke, M.A., F.R.S., was nominated President, and the Treasurer and Secretaries were re-elected.

The Librarian's Report having been read, and certain formal business disposed of, the retiring President delivered his Annual Address, taking for his subject "the Locomotion of Animals, with special reference to the Crustacea." On the motion of Dr. D. H. Scott, seconded by Mr. Howard Saunders, a unanimous vote of thanks was accorded to the President for his Address, with a request that he would allow it to be printed.

The Society's Gold Medal was then formally awarded to Prof. Ernst Haeckel, of Jena, for his researches in Invertebrate Zoology, especially in relation to the *Medusæ* and *Radiolaria*. It was received on his behalf by Mr. W. Percy Sladen, who read a letter of acknowledgment and thanks, prefaced by an expression of the writer's regret at his inability to come to England to receive the medal in person.

ZOOLOGICAL SOCIETY OF LONDON.

May 1st, 1894.—Dr. A. GUNTHER, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, and called special attention to a valuable collection of Mammals presented to the Society by Dr. J. Anderson, F.R.S., being part of the proceeds of his recent expedition to Egypt.

Dr. Günther exhibited and made remarks on specimens of a South-African Hornbill, *Buceros melanoleucus*, and of a portion of the tree in which the nest was placed, and spoke of its mode of nesting and of its extraordinary habits during that season. The specimens had been transmitted to the British Museum by Dr. Schönland, of Grahamstown.

Dr. H. E. Sauvage exhibited a vertebra of the earliest known Snake from the gault of Portugal.

Mr. W. Bateson exhibited a large number of specimens of *Gonioctena variabilis*, a phytophagous Beetle, from Spain, in illustration of discontinuous variation in colour.

Prof. F. Jeffrey Bell gave an account of the Echinoderms collected during the voyage of H.M.S. 'Penguin' and by H.M.S. 'Egeria,' when surveying Macclesfield Bank. The collection, which had been made by Mr. P. W. Bassett Smith, Surgeon, R.N., with the co-operation of Mr. J. J. Walker, Chief Engineer, was very extensive, and contained examples of many new species, some of which were of a very remarkable character.

Mr. Ernest W. Holt, Naturalist to the Marine Biological Association, gave an account of some of the results of his recent studies in teleostean morphology made at the Marine Laboratory at Cleethorpe. Mr. Holt spoke first of some specimens of the Ling, *Molva abyssorum*, Nilsson. The regular occurrence of this fish off the Faroë Islands, and its occasional capture on the coast of Iceland, were now recorded for the first time, the species having been previously observed only on the Scandinavian coasts. The specimens, six in number, all of considerable size, were described in detail, and the species was carefully compared with the allied form, *M. vulgaris* (the Common Ling). Mr. Holt next proceeded to describe the "*recessus orbitalis*," an accessory visual organ of the Pleuronected Fishes. The organ in question was stated to be a highly elastic saccular process of the membranous wall of the orbital cavity. It had been found to occur in all the Flat-fishes examined, *viz.* the Halibut, Long Rough Dab, Brill, Plaice, Flounder, Lemon-Sole, Dab, and Common Sole, and was believed to occur in all Flat-fishes with well-developed eyes. Finally, Mr. Holt spoke of an adult specimen of the Common Sole with symmetrical eyes, and discussed the bearing of this specimen on ambicoloration. The specimen in question, about 15 inches long, was perfectly normal in external configuration, except that the left eye had retained its position on the left side of the head, and was nearly opposite to the right eye. Antero-ventrally it had been somewhat overgrown by the skin. The coloration was normal, the right side being brown, and the left side white.

A communication was read from Mr. St. George Littledale, containing field-notes on the Wild Camel of Lob Nor, as observed during his recent journey across Central Asia.

Mr. Oldfield Thomas gave an account of a collection of mammals from Oman, S.E. Arabia, which had been transmitted to the British Museum by Dr. A. S. G. Jayakar, among which were examples of a new Hare, *Lepus omanensis*, and of a new Goat of the genus *Hemitragus*, proposed to be called *jayakari*, after its discoverer. Altogether seventeen species were represented in this collection, from a locality of which very little was previously known.—P. L. SCLATER, *Secretary*.

THE BRITISH ORNITHOLOGISTS' UNION.

The Annual General Meeting of the British Ornithologists' Union was held at the Zoological Society's Rooms, in Hanover Square, on Wednesday, the 9th inst. In the absence of the President (Lord Lilford), the chair was taken by Mr. P. L. Sclater, F.R.S. The report of the Committee gave a flourishing account of the finances, a good balance having been carried over, after payment of the expenditure on 'The Ibis' for 1893. One vacancy in the Union had been occasioned by death, and four by resignation since the last Anniversary, and the Union was stated to consist at present of 240 Ordinary Members, besides Honorary and Foreign Members.

Seventeen new candidates for election having been balloted for, Lord Lilford was re-elected President and Mr. F. D. Godman, Secretary for the ensuing year, and Lt.-Col. L. H. Irby and Mr. W. T. Blanford were placed on the Committee in lieu of two retiring members. It was agreed that a new (seventh) series of 'The Ibis' should be commenced in 1895, with the 37th volume, and that Mr. P. L. Sclater and Mr. Howard Saunders should be appointed as joint Editors of it. It was further resolved, on the motion of Mr. Harting, that the Committee should take the necessary steps towards the preparation of another volume of the 'General Index' from the commencement of the Fourth Series to the end of the Sixth Series, and consider at the same time the feasibility of improving it by including the names of authors of papers, and such places as are mentioned in the titles of papers.

ENTOMOLOGICAL SOCIETY OF LONDON.

May 2nd, 1894.—H. J. ELWES, Esq., F.L.S., President, in the chair.

Mr. S. Stevens exhibited a specimen of *Argynnis aglaia* var. *charlotta*, taken by the late Rev. James Watson in the New Forest in 1870.

Mr. J. A. Clark exhibited a curious variety of *Chelonia caja*, having an extraordinary wedge-shaped marking extending from the outer margin to the base of the left hind wing, and also, on the same wing, a small spot. It was brown and white in colour, and had the appearance of having been taken from the fore wing and inserted in the hind wing. The specimen was said to have been taken at Abbots Wood, in July, 1892.

Prof. E. B. Poulton exhibited living specimens of the larvæ of *Gastropacha quercifolia*, surrounded respectively during the early stages of growth by black twigs and lichen-coloured twigs, the food being the same in both cases. All the larvæ were shown upon a white paper back-ground, but examples of the surrounding twigs which produced the change of colour were shown beside each batch. Mr. Merrifield made some remarks on the subject.

Mr. E. Meyrick communicated a paper "On *Pyrilidina* from the Malay Archipelago."

Mr. C. J. Gahan read a paper entitled "A Supplemental List of the Longicorn Coleoptera obtained by Mr. J. J. Walker, R.N., during the voyage of H.M.S. 'Penguin.'"—H. Goss & W. W. FOWLER, *Hon. Secs.*

NOTICES OF NEW BOOKS.

Life and Rock: a Collection of Zoological and Geological Essays.

By R. LYDEKKER. 8vo, pp. 220. With illustrations.
London: Witherby & Co. 1894.

OF the twenty-one chapters contained in this volume the majority are devoted to zoology, and especially to its palæontological branch, while a smaller number relate to geology proper. While some of the former treat of the natural history of particular groups or species of animals, others are more especially devoted to a consideration of some of the many interesting problems connected with evolution, development, and mutual relationships of animals, which at the present day are attracting so much attention.

To enable the reader to form some idea of the nature and variety of the contents, we give the titles of the chapters, which are as follow:—"Elephants, recent and extinct; Tusks and their Uses; Moles; Spiny Animals; Parallelism in Development; Toothed Whales and their Ancestry; Whalebone and Whalebone Whales; Ruminants and their Distribution; The Giraffe; Lemurs; Armadillos and Aard-varks; the Oldest Mammals; Crocodiles and Alligators; The Oldest Fishes and their Fins; Living Fossils; The Extinction of Animals; Protective Resemblance in Animals; Sea Urchins; Nummulites and Mountains; A Lump of Chalk and its Lessons; and A Flake of Flint and its History."

On all of these subjects Mr. Lydekker has information to impart; not much that is new perhaps, but yet a great deal in a few words which have the merit of conveying to the reader just what he wants to know, and what he has possibly looked for elsewhere in vain. Thus, in a couple of pages, we get a clear

exposition of the chief characteristics which distinguish Crocodiles from Alligators; and in the chapter on "Spiny Animals," the author explains in what respect the spines of Porcupines differ from those of Hedgehogs. Thus in the Hedgehogs

"the spines, in place of terminating in sharp points, by which they are but loosely attached to the skin, like those of the Porcupine, the spines of the Hedgehog terminate interiorly in small knobs, which are placed beneath the skin, and may thus be compared to pins stuck through a piece of soft leather. Beneath the skin lies a layer of muscle known as the *panniculus carnosus*; and it is by the action of this muscle on their heads that the spines are raised from a recumbent to a vertical position when the creature rolls itself up into a ball—an action of which all Porcupines are quite incapable. In the Porcupine the spines are most developed on the middle line of the head and back, the hinder part of the body, and on the short tail. But while those on the body are solid throughout and pointed at each end, the spines at the extremity of the short tail are in the form of hollow quills inserted by narrow stalks. It is these hollow quills that make the loud rattling sound heard when a Porcupine is walking. . . . Although the owner is unable voluntarily to eject the latter, their pointed bases render them easily detached, and Leopards, which habitually feed on Porcupines, are found to be actually bristling with their quills."

We may supplement this remark with an observation of Dr. Hart Merriam, to the effect that the American Panther, or Puma (which usually preys upon Deer), is either particularly fond of Porcupine, or else is frequently forced by hunger to make a distasteful meal. It is certain, he says, that "it destroys a great many Porcupines, and it often happens that a Panther is killed whose mouth and lips, and sometimes other parts also, fairly bristle with the quills of this formidable rodent" (Trans. Linn. Soc., New York, 1882-84).

In his chapter "On the Extinction of Animals," Mr. Lydekker would have done well to have referred to an excellent paper on this subject by Mr. Frederic A. Lucas, published, with several good illustrations, in the 'Report of the U. S. National Museum,' 1888-89 (pp. 609-649). In this essay an account is given of several species not mentioned by Mr. Lydekker, such as the West Indian Seal, *Monachus tropicalis*; the Californian Sea Elephant, *Microrhinus angustirostris*; the Pacific Walrus, *O. obesus*; the European Bison, *B. bonassus*; the Californian Vulture; and the Tile-fish, *Lopholatilus chamaeleonticeps*. Some

of these, of course, would be more correctly described as approaching extinction, rather than extinct, though it would be unwise on that account to abstain from giving such reliable information as can be obtained concerning them. Mr. Lydekker's chapter, however, on this subject, is one of the most disappointing in the book, and conveys the impression of having been too hastily written. The facts which it contains are jumbled and confused. The author passes from African Elephant and Rhinoceros to the Tuatera Lizard and Moas of New Zealand, then to the extinct birds of Mauritius and Rodriguez. From these we are diverted to a consideration of the Northern Sea Cow, *Rhytina*; back again to the Mascarene Islands for Giant Tortoises and the Pied Starling of Réunion, *Fregilupus*; once more to New Zealand for a paragraph or two on *Nestor productus* and *Notornis mantelli*. Then comes a single page upon the Great Auk, followed by some remarks on the African Blaubok and Quagga, from a consideration of which we are carried back again to Bering Island, where Dr. Stejneger found the remains of Pallas's Cormorant in 1882, and thence to the Sandwich Islands, where the fashion of making feather cloaks for savage chiefs from a handsome little black-and-yellow bird, *Drepanornis pacifica*, has resulted in its extermination. Two lines in allusion to the "Diablotin, a remarkable burrowing Petrel of the Antilles," and eighteen lines upon the Pied Duck of Labrador, and the chapter concludes with a paragraph upon a South American rodent (*Dinomys*). This jumbling up of mammals, birds, and reptiles, without any logical arrangement, is extremely embarrassing to the reader, who must also be disappointed at finding so little said about many of the species named. In any new edition this chapter should be re-written.

We cannot say much for the text-cuts. Most of them appear to have been borrowed from other books, and having been printed from electros, have (as often happens) suffered in consequence. This is to be regretted, for the letterpress deserved to be better illustrated.

Lost British Birds. By W. H. HUDSON, Author of 'The Naturalist in La Plata' and 'Idle Days in Patagonia.' Published by the Secretary to the "Society for the Protection of Birds" (Mrs. Lemon, Redhill, Surrey). 8vo, pp. 32. With 15 illustrations. 1894.

ALTHOUGH we are not sanguine enough to believe that the above-named Society will ever succeed in what appears to be its principal object, namely, to persuade ladies to abandon the fashion of decorating themselves with birds' feathers, the series of pamphlets which are published under its auspices will, we doubt not, be productive of good, inasmuch as they tend to remove certain erroneous popular notions in regard to birds, and give publicity to facts which are worthy of consideration. Amongst these pamphlets we have particularly noted two by Professor Newton, on the 'Devastation of Bird-homes in Florida,' and on 'The Zoological aspect of the Game-laws.' Mr. Hudson, who has already explained a popular misnomer in his tract on 'Osprey, or Egrets and Aigrettes,' has just contributed to the series an essay of thirty-two pages on what he terms 'Lost British Birds,' that is, birds which from various adverse circumstances have ceased to reside and breed in the British Islands. The species dealt with are the Crane, Spoonbill, Capercaillie (though this bird has been re-introduced), Avocet, Bustard, Black-tailed Godwit, Great Auk, Savi's Warbler, Black Tern, Bittern, Marsh Harrier, Hen Harrier, and Ruff and Reeve. The information given about each of these species as formerly resident and breeding here is by no means exhaustive, but so far as it goes is tolerably accurate. It is to be regretted, we think, that while he was about it, Mr. Hudson did not make more of his subject, which is an extremely interesting one, but possibly he may have considered that any further amplification would have carried him beyond the scope of the series to which this pamphlet is contributed. The figures with which it is illustrated, although recognizable representations of the species named, are somewhat coarse in their execution, and by no means comparable, for example, with those in his delightful volume on La Plata, which has been already reviewed in these pages.

The Birds of the County Cork. By R. J. USSHER. Contributed to the Journal of the Cork Historical and Archæological Society. Thin 4to, pp. 23. Cork: Guy & Co. 1894.

MORE than a dozen years have elapsed since we endeavoured, in an article published in this Journal,* to arouse the apathy of Irish naturalists in regard to the preparation of a new Irish Fauna. We pointed out the great need of either a new edition of Thompson's work, or a fresh undertaking, and urged the formation of a Committee for the purpose of dividing the labour and expediting publication. It was perhaps not too much to expect that such a work might be completed in something less than ten years; but twelve years have now elapsed, and the matter is still apparently *in statu quo*! We are quite at a loss to understand this want of energy on the part of our *confrères* in Ireland. It is true that the formation of a Committee has been long ago announced, but we have not heard of any meetings of this Committee, nor of any instalment, published under its auspices, of the great work for which we are so impatient. That individual members of the Committee are not idle in regard to Irish natural history we have good reason to know, for they not only continue to favour us from time to time with excellent articles for 'The Zoologist' (for which we are duly grateful), but they have also started a new journal, 'The Irish Naturalist,' which we trust will awaken a wider interest in the subject throughout Ireland, and be the means of eliciting much useful information from various parts of the country. Still we are not happy. We want a new text-book on the Fauna of Ireland, and would once more urge upon Irish naturalists the extreme desirability of providing it.

Mr. R. J. Ussher has recently shown what can be done in a single county by a contribution on the Birds of the County Cork, and a goodly list he has been able to make out. It is perhaps to be regretted that he has not prefaced his remarks with some sort of introduction indicating the physical features of the county, and summarising the results of the observations which follow. But his notes on the various species which have been ascertained to occur will be read with interest by ornithologists, as well as the appended remarks by Mr. Robert Warren.

* "The Annals of Irish Zoology," Zool. 1881, pp. 433—445; 473—483.

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THE ORIGIN AND PURPOSE OF THE HORNS AND ANTLERS OF RUMINANTS.

BY ALLAN GORDON CAMERON.

I. INTRODUCTORY.

IN the second part of Darwin's great work upon the 'Descent of Man' (chap. xvii.), the frontal weapons of ruminants, whether horns or antlers, are derived from the principle of sexual selection as the result of male struggle and combat for the possession of the female. This view has been generally accepted by naturalists, and seriously questioned, so far as I am aware, by no authoritative writer on the subject. The law of battle, leading to superior calibre, and the power of charm, leading to superior ornament, seem to admit of particularly forcible application to the cranial armature of those polygamous and herding animals whose sexual combats are so determined, and whose weapons of war are so conspicuously ornamental. Dr. Wallace, who refuses for the most part to recognise a *vera causa* in Darwin's brilliant hypothesis, concedes and restricts its application to the subject under discussion; while Dr. Romanes, writing from Darwin's standpoint, affirms that in "arborescent antlers" we have phenomena which can be explained only by sexual selection "if they are to be explained at all."

It was wisely said by Jevons that almost every problem in science takes the form of a balance of probabilities; but a new

hypothesis must at least agree with the particular facts which it is framed to explain, and, assuming that these facts are properly established, it must agree with all of them. Tested by the facts to which it is here applied, the hypothesis of sexual selection is proved incompetent to play the part assigned to it; and is found superfluous, because the broader principle, which secures the preservation of favoured races in the struggle for life, provides a fitter explanation of the phenomena in question. To establish this conclusion will be the end of the present paper.

Antlers and horns, when viewed as something more than the familiar trophies of sportsmen, represent the comparatively finished product of a long biological adjustment, the factors of which can be found only in the life-history of existing ruminants. Two questions in chief are suggested by the study of these weapons, and must be met by any sufficient explanation of them. (i.) Inquiry into their purpose leads us to consider the type or style of weapon as an adaptation of means to ends, and asks the question how they came to be fashioned in this particular way? (ii.) Inquiry into their origin leads us to consider their partial limitation as to sex, and asks the question why they are variably present or absent in the females of genera and species whose males possess them generally?

Facing the subject from the standpoint of sexual selection, Darwin confronted difficulties in both respects, and stated them with characteristic frankness. In respect of structure, he rightly judged that the curiously curving horns of Antelopes, no less than the branched antlers of Deer, were weapons ill adapted to the purposes of sexual warfare between butting animals; failing as an adjustment for attack, because (as Caton also thought) a single straight point would have proved a far more deadly weapon; and disadvantageous as an adjustment for defence, because the complex types were liable to become interlocked with fatal result to both combatants. Explained as the effect of charm consequent upon female choice, "arborescent antlers" are beset with further difficulties. As Darwin recognised, they weight their owners with needless, if not injurious, ornament, and force the somewhat hazardous conclusion that female preference in the struggles of sex must handicap chosen males in the sterner struggle for life. Female choice in pairing does not, however, exist with herding ruminants in a state of nature, because the more

vigorous males take forcible possession;* and, even were it otherwise, the struggle for life would render the charm of useless ornament inoperative. Complex cranial weapons have survived, therefore they have once been useful, though sexual selection leaves their utility unexplained.

Equal difficulties arise, on the hypothesis, from the consideration of frontal weapons in respect of sex. A theory of horns and antlers, which finds their origin and purpose in the sexual strife of rival males, requires the normal limitation of such weapons to the sex for whose benefit they were primarily developed and by whose combats they have been conditioned through time. Their normal presence in the females of half the genera, representing all the families, of surviving ruminants which exhibit them, argues their mutual utility, and thence a wider purpose with a common origin. In other words, structural characters which are present in both sexes, whether partially or universally, possess a functional importance common to either sex, or they do not. If they are evidently useful, there is a strong presumption that they owe their existence to a primary adaptation for the common purpose, with which sexual selection, whether by male combat or by female choice, can have absolutely no concern. If they are useful to the males only, their enduring presence in the females unquestionably conflicts with the retrogressive principle of natural selection, which promotes the degradation and disappearance of superfluous and wasteful organs. Darwin touched here an aspect of the problem which was vital to his theory as a whole, and cut the knot with Alexander's sword. Carrying his argument into the wide battleground of inheritance, he reached the conclusion that characters originally proper to either sex might be transmitted to the same sex, or to both, according to the form of inheritance assumed in transmission, and independently of natural selection.† To this conclusion, as applied to the presence or absence of frontal

* The instance of a Red-deer hind referred to by Darwin is a case not of *choice* on the part of the female, but of *chance* on the part of an inferior male, while his superior is engaged elsewhere—a very different matter.

† The embryological data, to which Darwin attached great importance, admit of a phylogenetic interpretation which supports the view that the presence of frontal weapons in both sexes was a primitive character.

weapons in female ruminants, there is the logical, yet sufficient, objection (1) that we have no evidence in support of the explanation other than the facts which it is framed to explain; and (2) that in the explanation itself we invoke an unknown force which really adds a greater puzzle to a less. Horned and hornless females occur not only among genera constituting families, and among species constituting genera, but even among individuals constituting species, which occupy the same area of distribution and are subject to similar conditions of life. Horned females, moreover, exhibit horns, as Darwin pointed out, in every stage of a graduated series, from those which are of equal calibre with the male weapons, to those which are of lesser calibre, to those which are rudimentary, to those which are disappearing. In ascribing all such cases to distinct forms of inheritance acting concurrently yet indefinitely in the alternate transference or non-transference of masculine characters without regard to use or purpose, we enter a region of speculation which betrays the weak point of our hypothesis.*

Apart, however, from any question of sex or structure, the derivation of frontal weapons through sexual selection rests upon a fundamental error of fact in taking too easily for granted, that the possession of the female depends upon the calibre of the horns or antlers of the male, or upon the presence of such weapons at all—even in those species which normally exhibit them highly specialised. Unquestionably among existing ruminants, whether horned or antlered, the rights of the harem are governed by the law of battle: but the law of battle is the law of the prize-ring—that the fortune of war favours the heavy weight, and the science of sexual warfare is the primitive science of the battering-ram, which decides the issue in the clash of skulls by the force of impact, and by the pressure of bodily weight behind it, irrespective of the calibre of the weapon. It is a common experience with British stock-breeders that the lighter horned breeds of sheep and cattle are not a match for their heavier hornless congeners; and the carefully observant Caton notes of

* The legitimate assumption that "latent characters belonging to the other sex are always present in each sexually differentiated organism" (Weismann) does not help us to decide what these characters may be for a particular sex and in a particular case,—a matter which can be determined only from the facts as we find them,

the Wapiti Deer confined in his park at Ottawa, that the largest antlers ever grown in his grounds were carried by a medium-sized Deer who, in common with several others, was always subject to the control of a larger Deer with smaller antlers than any of them. But a theory relating to wild animals may reasonably object to arguments drawn from domestic or semi-domesticated subjects, reared in artificial conditions and leading an artificial life, from which we can infer only what will happen if the conditions remain the same. Our *experimentum crucis*, or crucial test, must relate to ruminants in a state of nature, and under circumstances which place the issue beyond the shadow of a doubt. Dr. Wallace has observed with justice that "the power of predicting what will happen in a given case is always considered to be a crucial test of a true theory;" and to this we may add that when the predicted event happens to be the one legitimate deduction from our assumed premisses, a conflicting result is necessarily fatal to the hypothesis. In the common stag we have the typical member of a group (*Cervus*) endowed with remarkably combative instincts and possessed of remarkably formidable weapons. These weapons are limited by inheritance to the males, and, according to the theory of sexual selection, have undoubtedly been acquired as sexual weapons for fighting with their fellow males. If we suppose, for argument, that a stag absolutely devoid of the highly specialised cranial armature which distinguished his fellows should strive to take and hold a harem against these antlered rivals, how, on the theory, should we estimate his chances of success? There is but one possible answer to such a question consistent with the hypothesis, and we know that Darwin gave it; yet the fact, though the great naturalist was unaware of it,* is just the other way. "Bald" stags without antlers, but otherwise perfectly vigorous, probably cases of atavism, are of constant occurrence among the wild Red-deer of North Britain. Though wielding no weapon and displaying no ornament they prove to be in all respects a match for their armed and (theoretically) more attractive rivals, are

* Mr. McNeill, of Colonsay, to whom Darwin applied for information about the combats of Red-deer, can hardly have been unaware of a fact which is of constant occurrence in the Island of Jura, where his experience of Red-deer was gained; but he was evidently unaware of its significance to the theory of the great naturalist.

usually master stags, and sometimes acknowledged monarchs of large herds. In other words, a Deer fighting for a harem with the bare forehead of his Miocene ancestors achieves success, sustained and repeated, against rivals armed with complex and deadly weapons, laboriously fashioned by countless ages of sexual selection towards the very purpose for which they are now proved useless.

The theory of sexual selection must therefore be set aside as a scientific account of the origin and purpose of the frontal weapons of ruminants. It does not explain their structure as an adaptation to the assumed purpose, nor does it explain their presence in both sexes as a result of the assumed origin, while it is in absolute conflict with established facts relative to sexual combat between armed and unarmed individuals of a species.

But the success of the bald stag in sexual warfare, which forbids our finding in the discarded hypothesis a *vera causa* for the derivation of frontal weapons, unmistakably indicates in what direction we must look for a true key to the puzzle. Everyone who has hunted wild Deer with hounds, whether slow or swift, knows that an unarmed stag would instantly be torn to pieces where a well-equipped Deer would kill his canine adversaries or fight his way through. "The dog that would fly into the face of a sambar stag is perfectly certain to meet a glorious death," writes Sir Samuel Baker, whose wide experience of this particular sport lends authoritative weight to the statement; and Lloyd has recorded how the Swedish Elk, when pressed by hungry wolves, will strike one dead with a single blow. Referred to a similar purpose, the horns of Antelopes, which, from the point of view of sexual combat, proved so great a puzzle to Darwin, exhibit throughout their several types a corresponding adaptation. Weapons that "seem singularly ill fitted" for the strife of rival males, present when lowered to a carnivorous foe prepared to spring a brace of spears in rest or sabres prompt to thrust on either side. Sir Samuel Baker describes the horns of the Hartbeest as "carefully arranged for defence"; and "it seems to be undisputed that the spear-like horns of the Gemsbok are sufficiently formidable to repel the attack of the Lion" (Lydekker). Of the Beisa Antelope, Mr. Blanford writes that "their long, straight horns are most deadly weapons"; and of the Sable Antelope Mr. Selous tells us that "like the Roan Antelope and

Gemsbuck it will commit terrible havoc amongst a pack of dogs—indeed, I have known one to kill three with three consecutive sweeps of its long scimitar-shaped horns.”* Further illustration of a defensive purpose will be found in the (historically) later, and more familiar, bovine types which include the wild and domesticated sheep and oxen. From the unimpaired fighting ability of hornless breeds we have already seen reason to infer that, in sexual combat dependent on a clash of foreheads, laterally spreading horns are of small account; but sufficient proof of their service as defensive weapons appears in the single fact that the Buffaloes of Asia and Africa are a match for the largest felines of their respective continents.

These facts unavoidably prompt the question whether the horns and antlers of ruminants are not the biological answer to carnivorous teeth and claws—evoked by the necessities of race-preservation in the struggle for life, and fashioned by natural selection so as to unite comparative immunity in sexual warfare with fatal efficiency against common foes? In this double purpose working to the one result, protective adaptation, may we not read the secret of the form and development of frontal weapons from the simplest to the most complex? and may we not thus account for the apparently anomalous fact, that weapons which are dangerously effective in regard to the external enemies of a species, become relatively innocuous in the strife of its fellow-members one with another? I believe the facts authorise an affirmative answer to these questions, and I propose to consider them in three respects, historical, structural, and sexual, in the order named. Assuming that horns and antlers are the result of a protective adjustment consequent upon the mutual relations subsisting between ungulates and carnivores through Tertiary time, it becomes of primary importance to inquire how far the history of these relations corresponds with the requirements of our theory. We shall then be in a position to consider, in the second place, the type or style of weapon as a structural adapta-

* The defensive powers of the larger Antelopes have recently been made a subject of remark by Count Teleki (on the Eland), Mr. F. J. Jackson (on the Oryx), and Mr. K. A. Bryden (on the Gnu). A notable instance will be found in Mr. Selous's fascinating book on 'Travel and Adventure in S.E. Africa,' p. 190.

tion of means to ends; and to ask, in the third place, why such weapons are variably present or absent in the females of genera and species whose males possess them universally.

II. HISTORICAL.

In the history of frontal weapons the salient feature is their gradual evolution in an ascending scale; in the history of ungulates, it is the immense surviving majority of horned and antlered genera; in the history of carnivores, it is the early appearance in geological time of highly specialised and destructive types. I shall endeavour to show the bearing of these facts upon a protective theory of horns and antlers.

Sexual selection, in fixing the attention upon a particular class of phenomena, leads us to over-estimate the part played by sexual passion, and to under-estimate the part played by self-preservation, in the struggles of ungulate life during the slow succession of ages, when the inhabited earth was nothing but a wide hunting ground at the mercy of the Cats and Dogs. Our "zoologically impoverished world"—our civilisation, which keeps in check the larger flesh-eaters that still wait upon extinction—even our subjective notions of "the ethical aspects of evolution," combine to hide from view the long reign of feline and canine "butchering machines, which have succeeded one another through the Tertiary epoch, therefore for many thousands, or more probably millions, of years" (Huxley), and have marked the course of the ungulates in history with a continuous stream of blood. Darwin's consoling optimism that, in the struggle for life, "the war of nature is not incessant, that no fear is felt, that death is generally prompt," is irreconcilable with the experience of those conversant with wild countries and wild beasts. Sexual passion—the reproductive instinct—occupies less than a tenth part of normal ruminant life; fear—the self-preserving instinct—rules the whole of it. "The beasts of prey," writes a competent authority (Sir Samuel Baker), "are the terror of the weaker species, which cannot even assuage their thirst in the hottest season without halting upon the margin of the stream and scrutinising the country right and left before they dare to stoop their heads to drink. Even then the herd will not drink together, but a portion will act as watchers, to give notice of an enemy should it be discerned while

their comrades slake their thirst.”* Hunting man adds to these fears, but is also feared by the beasts of prey, which before his coming knew no restraint save their surly respect for one another, and suffered no check save from the defensive armature of their intended victims. Among the destructive agents of Tertiary times a unique position was held by the (now extinct) Machærodonts, tiger-like felines with immensely-prolonged upper canine teeth, recurved sabre-like and sometimes with serrated edges, enabling them “to retain like barbs the prey whose quivering flesh they penetrated” (Owen). Members of the genus exhibiting “the most specially carnivorous type of dental structure known” (Lydekker) appear in the Eocene (Phosphorites of Quercy) and traverse the whole of the Tertiary period, the scourge alike of the Old and of the New World. Associated with the early Machærodonts were ancestral Dogs, foreshadowing the Bears on the one hand (*Amphicyon*) and the Civets on the other (*Cynodictis*); while from the Pliocene, and onwards, Lions and Tigers allied to living species, and true *Canidæ*—Dogs and Wolves, hunting their prey in packs and of world-wide distribution—swelled the grim record of flesh-eaters and forced the unremitting slaughter of hosts of ungulates. In this great struggle the more adaptive ungulate groups, chiefly of the pair-hoofed section (*Artiodactyles*), becoming specially modified for a defensive purpose, survived and multiplied; but the less adaptive groups, chiefly of the odd-hoofed section (*Perrissodactyles*), failing modification in this respect, were slowly exterminated.

He who surveys to-day the roll of existing ungulates in a state of nature cannot fail to reflect upon the great numerical preponderance of horned and antlered genera over those devoid of cranial armature. Of the perissodactyle section there survive but three genera (*Tapirus*, *Equus*, *Rhinoceros*), and one of these is horned; while of the artiodactyle section we have fifty genera, forty of which are claimed by ruminants with horns or antlers, and four by Pigs with tusks. Yet at the dawn of Tertiary time the balance of numbers was far the other way. In the gypsum

* Comp. Mr. Selous on “the cold cruelty of Nature’s inexorable laws” (*op. cit.*, 413), and Lieut. von Köhnel on the restless movement of the countless herds of animals giving life to the splendid panorama south of the Nyuki river in Brit. E. Africa—“There seemed to be always something suspicious in the air. . . .” (*Teleki Expedition*, ii. 20).

quarries of Montmartre (Eocene of France), among the fossil relics of fifty species of quadrupeds, nearly four-fifths of the whole are perissodactyle ungulates, which have left in this enduring monument not only their bones but their footprints side by side with those of their carnivorous destroyers. The use of the head for defence, facing the foe, seems to have endowed ancestral ruminants with protective capabilities, which were turned to decisive account in the development of cranial weapons. Such weapons first appear in the middle Miocene of the Tertiary geological period, bony outgrowths from the frontal region of the skull, simple or pronged, and covered with hairy skin, which marks the point of divergence to the more specialised horns and antlers that succeeded. The hair, in the one case, hardened into horn upon the bony core beneath it (*Bovidæ*); the bone, in the other case, stripped of its hairy covering, suffered alternate fracture and renewal till slowly fashioned into a deciduous antler (*Cervidæ*). Weapons of the transition survive in the horns of the Prongbuck, which cast their horny sheath like the velvet of the antler, yet retain the permanent bony core characteristic of the true horn. The stump-like appendages of the Giraffe, which seem to recall the primitive type of weapon, are not, however, a process of the skull but of independent ossification. When we reflect that the slender horns of the little Indian Blackbuck will give pause to such a relatively formidable opponent as the hunting Leopard, we need not doubt that even the simple weapons of the Miocene sufficed at the outset to inspire the destroying carnivores with a preference for unarmed prey; and that this occurred in fact we have silent, though eloquent, testimony in the complete extinction during this period of whole families of hornless ungulates. The Anoplotheres, a specialised group linking the pair-hoofed with the odd-hoofed section of the order, the tapir-like Palæotheres, the Anthracotheres, pig-like and swamp-loving, do not survive the Miocene, and are wiped out of the geological record thereafter.

Increasing destructive pressure, as carnivores multiplied and herbivores declined, was met, on the part of the *artiodactyles*, with further protective adjustment in the direction of more powerful weapons, and caused, on the part of the *perissodactyles*, a further diminution of numbers in the direction of gradual extinction. When we pass to Pliocene times, we find a ruminant fauna carrying frontal weapons absolutely differentiated and

highly specialised: true Antelopes with horns lyrate (*Gazella*), recurved (*Palæoryx*), or spirally twisted (*Palæoreas*); true stags with branched and spreading antlers; and, at the close of the period, true oxen with long horns laterally projected and curved anteriorly. Similar types recur in the Pleistocene and recent formations, but with further differentiation of horn-bearing genera (sheep and goats), and further specialisation towards increased complexity and greatly increased proportions. We find, on the other hand, that the altered numerical proportion between the armed and unarmed ungulates becomes a striking feature of each succeeding fauna. In the older Pliocene, represented by the famous Pikermi fossils, horse-like animals (*Hipparion*) are numerous, but armed ruminants (Giraffe and Antelope) already hold their own; while in the later Pliocene* of the Cromer Forest bed, artiodactyles,—including long-horned oxen, complex-anthered deer, and tusked pigs,—largely predominate, gradually (Pleistocene and Palæolithic) crowding the unarmed perissodactyles out of the historical perspective. Of the genera *Bos* and *Cervus* it may be said with truth that “there were giants in the earth in those days,” armed with cranial weapons of more than proportionately gigantic size: buffaloes with long crescentic horns measuring a dozen feet along the curves from tip to tip (*Bos antiquus*); and huge elaphine stags,—some with round antlers (*Cervus Spelæus*) resembling, yet exceeding, those of the Wapiti, and some with palmed antlers (*Cervus giganteus*) of a weight and span that dwarf all existing types. These, and other species, associated with great carnivora that preyed upon them, are numerous represented in the river-gravels of Pleistocene Eurasia, and were contemporary with palæolithic man, who finally intervened to exterminate both the destroyers and the destroyed.

Thus it appears that, from the early Tertiaries (Eocene) and onwards, carnivores of destructive type have lived by incessant slaughter of ungulates; that, in the middle Tertiaries (Miocene), ancestral ruminants developed frontal weapons contemporaneously

* Prof. Boyd Dawkins assigns the Forest-bed series to “the Pleistocene, or that period when the living higher Mammalia were abundant, and not to the Pliocene, in which there were only some three or four of the higher Mammalia present in Europe.” I have followed Prof. Martin Duncan in the text, but the disputed point does not affect my argument.

with the rapid disappearance of hornless ungulate families; and that, in the later Tertiaries (Pliocene) and onwards, the development of horns and antlers follows an ascending scale which is parallel, on the one hand, with the survival, multiplication and lasting numerical preponderance of horned and antlered ungulate genera (deer, antelopes, oxen), and, on the other hand, with the decrease in a diminishing ratio to all but ultimate extinction of perissodactyle genera not similarly endowed, though starting in the race for life with a not less marked majority.*

In reaching the implied conclusion that horns and antlers were aboriginally protective weapons, we may reinforce our argument with the fact that these weapons have suffered a gradual yet continuous loss of calibre throughout the human period. Among various causes which have contributed to this effect it must not be forgotten that, with advancing civilisation, the conditions to which such weapons owe their origin must inevitably cease to exist. Carnivores, great and small, are slowly but surely disappearing in their unequal struggle with new masters of the world; and the cranial armature of ruminants, which proved a solid defence against teeth and claws at close quarters, avails nothing against more cunning foes who fight with missile weapons, whether flint, spear, or bullet. Horns and antlers have declined with the declining influence of natural selection, and illustrate the fundamental truth that "not only does the survival of the fittest select the best, but it also maintains it" (Weismann), the most elaborately adjusted adaptation being "handed over to a process of gradual destruction the moment it ceases to be essential to the life of the species."

(To be continued.)

* The predilection of the Puma for horseflesh leads Mr. Hudson to suggest that the indigenous horses of America were exterminated by Pumas ('Naturalist in La Plata,' p. 33).

THE FAUNA OF LINCOLNSHIRE.

[In an Address to the Lincolnshire Naturalists' Union, delivered at Lincoln on May 31st last, Mr. John Cordeaux, as President of the Union, made some instructive observations on the faunal areas of Lincolnshire, and on the best mode of utilising the materials which exist for elucidating the Natural History of the county. As those remarks will doubtless interest many besides those to whom they were originally addressed, we give the following abstract, omitting such observations as were of purely personal or local application.—ED.]

LINCOLNSHIRE is the second largest county in England, its total length being seventy-five miles by forty-eight in breadth, and containing 1,777,879 acres, 85 per cent. under cultivation. The surface presents a very considerable diversity of character, sea-coast, marsh, wold, moor, heath, and fen, and some very considerable woodlands with much pleasant and typical scenery, without anywhere rising into the grand and strikingly picturesque.

The county is not readily divided into what are called "faunal areas"—that is, districts more or less compact, with well-defined boundaries, between which—one or the other—faunal distinctions can be clearly established. In taking a general survey of the whole area it appears capable of being irregularly divided into at least six fairly marked districts; these are—

- I. The Marsh and Middle Marsh—which is the whole of the great alluvial flat which lies between the east coast and the foot of the chalk wolds, as far as Spilsby.
- II. The Fens—south of Spilsby and Wainfleet and east of Billingham, Heckington, Bourn, and Market Deeping, with a branch extending westward of the Witham to Lincoln.
- III. The Chalk Wolds.
- IV. The Heath—an irregular district, partly on the oolite and partly on the lias, and not easily defined. In its more southern portion it is split into two arms by the Witham valley. It runs from S.E. to N.W., and includes the heaths near Woodhall Spa, the moorland near Market Rasen and below Caistor, and the commons and rabbit-warrens between Gainsborough and Frodingham, in the north-west of the county.

- V. A portion of Kesteven, south of Grantham, and east of Belvoir, of which Corby is about the centre, well wooded, picturesque, and highly cultivated, and containing noble parks and country seats.
- VI. The Isle of Axholme, formerly moor, bog, and widely-extending heath and low firwood, but now 50,000 acres of rich warp, and bounded to the north-west by the great level of Thorne waste in Yorkshire.

It must be clearly understood, however, that these divisions are only approximate, and that with our present knowledge no absolutely hard and fast lines can be laid down defining faunal areas, and that there are yet portions of the county which it is difficult to range under any of these divisions.

In the Marsh and Middle Marsh is included the whole of the low-lying plain between the foot of the chalk wolds and the sea, including the sea-coast itself and all its wide attractions. The chief interest of this district rests in its Ornithology—more particularly in the spring and autumn—and in connection with the migration of birds. The total number of species which can fairly be admitted at the present time into the Lincolnshire avifauna is somewhat doubtful. In the Humber district, up to this date, I have been able to record 290. This compares favourably with the Norfolk list of 293, and Yorkshire with 310. With our present knowledge as to the frequency with which rare birds turn up during the period of migration, far out of their ordinary route, I think we should attach very little importance to the increase of any local or county list by the addition of mere wanderers. The record of such is interesting as showing how far some birds get driven out of their normal course. The chief additions to the Humber district in late years have come from Spurn, but there is no reason why equally good results should not be obtained from our own coast.

The collection of facts in connection with the Botany of this district commenced as far back as 1590, and the great naturalists of former days—Gerard, Ray, Sir Joseph Banks, and Dr. Martin Lister—have each in turn visited and investigated its floral treasures.

As regards the Marine Mammalia (the Seals, and various forms of Whale, Grampus, Porpoise, and Dolphin), although in recent years considerable additions have been made to our local

list, we still require further knowledge and more scientific investigations. The capture of a Seal or the stranding of a Whale—and such occurrences are by no means unfrequent—should at once be noted, and an examination carried out on the spot, careful notes and measurements made, the skull, at least, preserved, and where possible a photograph taken before the carcase is removed.

There is no other faunal area in Lincolnshire where the old glories have so entirely vanished as in the fenland, formerly a vast level of peat-moor, morass and bog, with league beyond league of shallow mere, interspersed with a vast growth of reed and bull-rush and various water-loving plants, and on the drier portion deep sedge and doubtless some rich pasturage, with thicket of sallow, willow, birch, and sweet-gale, which before the dawn of history had usurped the place of oak, Scotch fir, and yew. The whole of this vast level was a paradise for wild creatures, beast, bird, and fish; and predominate over all, upon the peat-stained waters of the shallow lagoons floated primitive man in a canoe dug out from a single tree, and using weapons tipped with fractured flint or fish-bone.

Of the natural treasures of the old fenland we have but scant record. Unfortunately our forefathers, when they did write, cared little for depicting their natural every-day surroundings, yet we must be thankful for the few precious records which have come down to us of those olden times, and enable us to form some idea of the extreme richness of the Fen fauna and flora, from the 'Liber Eliensis'; the Chronicles of Crowland; and the writings of William of Malmsbury, Thomas Fuller, Camden's 'Britannia,' and the naturalists Pennant, Ray, and Montagu; also the quaint verses left by Michael Drayton in his 'Polyolbion,' and by "Antiquary Hall," of Llyn, in the doggerel rhymes depicting a fenman's daily life.

One aim of our Society should be the collection of any scrap, oral or written, in connection with physical-archæology, and any who have opportunities of inspecting old deeds, letters, and family account-books, will do good service by extracting any small matter which directly or indirectly bears on this subject. Such entries were, no doubt, considered most trivial by the original writers, but in the light of the present day they are of much interest and importance. To cite one or two instances alone, how little

historical record is left of the Great Bustard in Lincolnshire. The late Sir Charles Anderson, of Lea, in 1874, sent me the following extracts from an old account-book kept by Charles Anderson, at Broughton, near Brigg, from 1669 to 1673:—

1670, September 26. To John Hall, brought Curlew 1s.

„ October 23. Item to Thos. Beckett for killing two Bustards 2s.

Then there is the letter from the great Dr. Johnson, dated January 9th, 1753, to his friend Bennet Langton, of Langton, acknowledging the receiving a parcel of game, amongst other things a Bustard, which he gave to Dr. Lawrence.*

A letter written to myself by the Rev. Edward Elmhirst, November 29th, 1886, containing personal recollections of Lincolnshire ornithology, also his communication made to 'The Field,' Nov. 27th, 1886, concerning the former nesting of Hen Harriers in the moors near Market Rasen, are amongst the most valuable contributions to the records of county natural history in recent years.

Of infinite interest also, as throwing light on the past, would be the account-books and records of captures made in the duck-decoys at one period so common in the marsh and fen. We have never met with more than one decoy-book in Lincolnshire, namely, the well-kept register of the Ashby Decoy, near Brigg, worked successfully for so many years by Captain Healey.

So marvellously abundant were wildfowl before the fens were drained, that we are told a flock of wild ducks has been observed passing along the north and north-east into the east fen in a continuous stream for eight hours together.

Our next faunal area is very distinct and well marked—the Chalk Wolds—in its greatest length, from Barton-on-Humber to Burgh, fifty-two miles, and the greatest breadth, near Market Rasen, fourteen miles; the highest point of the range, 549 ft., is near Normanby Clump, and this is the highest land in the county. Before the general enclosure, at the commencement of the present century, the wold was a wild and open region, a rolling upland, more or less intersected by deep valleys. These rounded hills were covered with heather and heaths, coarse rough grasses, like the barren brome, and *Aria cæspitosa*, the turfy hair-grass, the most graceful if the most useless of all, with thousands of acres together

* This letter will be found quoted in 'The Zoologist' for 1879, p. 340.—ED.

of gorse, and ancient thorns in clumps and single. It was a district most admirably fitted to the habits of that noble bird the Great Bustard, and the Stone Curlew, the former probably almost extinct before the commencement of the century, the latter still holding its own—a few pair nesting annually, though not now on the wold.

The two distinct ranges of chalk and oolite which run from south to north of the county form elevated tracts, which in their original condition were heath and moorland, and almost destitute of timber trees. Along the flanks of these hills and in the intervening low country stretched the deep forests of Kesteven and Lindsey,—the Bruneswald,—oak, ash, elm, beech, fir, holly, yew, and hazel, sufficient remains existing in some of our oldest woodlands to recall the ancient glories of the land. No better “happy hunting grounds” remain to reward the naturalist than these comparatively undisturbed areas. Here in 1884 an example of the old British Wild Cat (*Felis catus*) was taken,* and the Pine Marten (*Martes abietum*) can scarcely yet be extinct; bones of Red Deer (*Bos longifrons*), Wolf, Wild Boar, and Beavers have been found in the becks. We have as yet no list of Lincolnshire mammals, and I shall be greatly indebted to any of our members who will enable me to complete a list, which is already partially prepared, with notes from their respective districts.

The heath is another most charming faunal area, from the fact that some few scattered portions are still in their primitive condition, as in the neighbourhood of Woodhall Spa and the warrens and commons of Scotton, Manton, Twigmoor, Crosby, and Brumby in the north-east. The Ermin-street, that great military highway of the Romans, which passed through the gates of their chief fortress, Lincoln, followed the ridge of the oolite from south to north—to east and west of this was a wide, open, and continuous stretch of elevated tableland, the roads running through leagues of purple heather where the pink and purple shading of the common and cross-leaved heaths intermingled with the yellow blooms of the petty whin and sheets of pale blue harebell, and the darker blue gentian (*Gentiana pneumonanthe*). A glorious land it was to cross in those days, the long, lone, level line of a well-kept war-path stretching like a ribbon over the heath, and marked at short intervals with high stones or posts as a

* See ‘The Zoologist,’ 1884, p. 380.

guiding line in fog and snow, in a solitude but rarely broken. except by the footfall of the legionaries and the dismal creakings of the baggage-train and provision carts, and above under the blue heaven carolled the Lark as now, and the plaint of the Golden Plover sounded sweet from off the moorlands.

The north-east corner of Lincolnshire, notwithstanding recent changes and trade encroachments, is still rich in animal and plant life, and presents a wide field for future research. Further westward, and beyond the Trent, lies the Isle of Axholme; some portion, adjoining the great Chase of Hatfield and Lindholme, in Yorkshire, was once the hunting-ground of English kings. We must turn to the pages of historians, as Leland, De-la-Pryme, Dr. Stonehouse, and others, if we wish to learn its ancient condition before the enterprise of the Dutchman Vermuyden transformed its wastes and swamps and demon-haunted solitudes into fertile lanes and at the same time banished its indigenous flora and fauna. In fact, the entire district, including Thorne waste, beyond our border, and portions also east of Trent, resembled the "tundras" of Lapland and Northern Asia, and, like these, were the breeding-homes of innumerable wildfowl and waders. Most suggestive of a not remote Arctic character are the lingering of such plants as *Selaginella selaginoides*, *Lycopodium alpinum*, recently discovered by the Rev. W. Fowler, also *Andromeda polifolia*, and *Empetrum nigrum*, on Thorne waste, *Myrica gale*, generally, and the impressions of leaves of some Arctic willow in the laminated silts and peaty alluviums.

Of our sixth district, that south of Grantham and east of Belvoir, I can tell you little, for, excepting in passing through by rail, it is a *terra incognita* to me. The chief attraction is Grimsby Park, which contains many fine oaks, hornbeams, and hawthorns, and a small herd of Red Deer—interesting as the only one left in the county, and descendants of those indigenous deer which at one period wandered wild, free, and unrestricted through the length and breadth of the land.

In our investigation into the natural history of this county, we must remember that at no very distant period Lincolnshire was part of the mainland of Europe, and there was no North Sea as we know it now, and we must therefore expect to find close affinity between the fauna and flora on both sides of the water. Once, no doubt, a great central river, whose debouchure was over

the Dogger Bank, received the waters of the rivers from each side. The North Sea, if you will take the trouble to look at Mr. Olsen's map, is little more than a great plain covered by shallow water; off the north-east coast of England it is twenty fathoms, and as we go south even this depth is exceptional. The North Sea contains some remarkable depressions, one of which, the Silver Pit, is a narrow submarine valley fifty fathoms in depth, forty miles off the north-east coast of Lincolnshire. The intrusion of this great water, the North Sea, between ourselves and the continent may have been very rapid, for when the chalk barrier, which presumably at one time extended eastward from Flamborough Head (cropping out again around Heligoland) was once breached and the central river taken in flank, there is no reason why the great level plain of "intermediate" Lincolnshire should not have been submerged in a period even of a few days.

Before closing these remarks,—as we are now engaged in rocking the cradle of the Lincolnshire Naturalists' Union,—I should like to say a few words as to the possibilities of a future, and the taking up of a useful position. There is no other county in England in which the fauna and flora have so greatly altered; large numbers of birds, insects, and plants have been altogether destroyed, or, in the former case, driven away by enclosure and drainage. It becomes therefore an imperative duty to use our best endeavours to preserve what is left, and to take care that our scarcer mammals, nesting birds, and surviving plants are not ruthlessly destroyed nor unnecessarily banished.

NOTES AND QUERIES.

Memorial to Gilbert White.—The new water supply for the village of Selborne, which has been given to the inhabitants as a memorial to Gilbert White (Zool. 1893, pp. 201, 290), was made free for public use on June 8th, the inaugural ceremony being performed by Lady Sophia Palmer, daughter of the Earl of Selborne. Hitherto the inhabitants have been compelled to obtain their water at a fountain situated at the spring-head, and in some cases a quarter of a mile had to be traversed to obtain a bucketful. About £250 was raised by subscriptions, and by means of a hydraulic ram at the spring-head the water is now forced into a reservoir erected eighty feet above the level of the village, and by means of gravitation

the water is circulated through the mains, which are laid in the principal streets. At certain spots taps are placed along the streets, at which the people can obtain the water. Lady Sophia Palmer, accompanied by Lord Selborne, arrived at the village in the afternoon, and having been presented with a bouquet, pressed a lever, by means of which the ram was set in motion. Her ladyship subsequently proceeded to the village, and drew the first bucket of water. Lord Selborne, in the course of a brief speech, said the villagers should congratulate themselves upon having a good water supply, which was a useful and valuable gift. Water was one of the most excellent of God's gifts to man. Referring to the difficulties which the people had heretofore experienced on this score, he remarked that if Gilbert White had been asked what sort of memorial should be erected he would doubtless have chosen the most useful and the most unpretentious. The one they had provided would be the one he would probably have liked best.

MAMMALIA.

The Indian Antelope: period of Gestation.—At a meeting of the Zoological Society, held on June 5th, Sir Edmund Loder made some remarks upon the period of gestation in the Indian Antelope, based upon observations made upon a small herd of those animals in his own park in Sussex. Three does had produced fawns twice in the year, and the period of gestation was stated to be five months. The importance of these observations may be inferred from the fact that none of the authorities on Indian Mammalia have published any statistics on the subject. Jerdon, in his 'Mammals of India' (p. 277), quoting Elliot, states that "the rutting season commences about February or March, but fawns are seen of all ages at every season," and this statement has been copied by subsequent writers. When statistics in regard to other species can be obtained, it will probably be found that in the smaller Antelopes the period of gestation is the same as with the sheep, five months, and not eight, as in the case of the Cervidæ.—J. E. HARTING.

The Squirrel in the Southern Highlands.—At Glenrazie Woods recently I noticed some Squirrels skipping amongst the trees, and this was an occurrence of more than usual interest to me, as it gave ocular demonstration that these pretty little animals had become established to the westwards of the Cree. When my friend Mr. J. A. Harvie Brown published, in 1881, his 'History of the Squirrel in Scotland,' I was unable to furnish him with any evidence that Squirrels had extended any farther westwards in Galloway than Cumloden Park, where the first one was seen in 1783. In 1892 Sir Herbert Maxwell, writing in the 'Annals of Scottish Natural History,' stated that Squirrels had been seen at Monreith about 1882, but that it was not till 1889 that he had noticed them himself. They soon,

however, became quite abundant. The extension of the species throughout Wigtownshire has, therefore, been very rapid.—R. SERVICE (Maxwelltown, Dumfries).

Homing Instinct in Ferrets.—One of the most familiar attributes of some domestic animals is the faculty of being able to return to their homes over roads of which they could have had no possible previous knowledge. While dogs, cats, and pigeons have perhaps the largest share of the homing faculty, some other of the domesticated animals—black-faced sheep, for instance—are well known to depend on it for occasional and often undesirable returns to their original home. I have just been informed by a gamekeeper of an instance of this homing faculty in one of his Ferrets. It is worth mentioning, because Ferrets are animals that one could hardly suspect of “homing” under any circumstances. This particular Ferret was lost at a distance from home, as the crow flies, of about two miles and a half. To return it must either have taken a much longer and more circuitous route, or else swam across a pretty wide burn. But in less than a week after it was lost the Ferret walked in at the open door of its master’s house, looking none the worse for its temporary sojourn in the wilds.—ROBERT SERVICE (Maxwelltown, Dumfries).

[Other instances of the kind will be found recorded in ‘The Field’ of Jan. 25th, Feb. 1st and 8th, 1873; Jan. 23rd and 30th, 1886.—ED.]

Serotine Bat near Hastings.—I am forwarding a Bat obtained last evening (May 29th), which I make out to be the Serotine, *V. serotinus*. Please say if I am correct. It is one of a colony of about twenty established in a house at Guestling, near Hastings. I have watched them emerge about fifteen minutes past sunset, going off in parties of from two or three to seven or eight. They all follow the same line, though not a direct one, to a wood a short distance away, flying high and steadily until reaching it. I obtained another at the same time, also a female, the fur of which is distinctly brighter, and, judging from the more worn appearance of the teeth, is older. This specimen is not hit so hard with the shot, and I am preserving it. It agrees with Bell’s measurements except in the expanse of wing; this is exactly 14 inches (before skinning).—H. G. JEFFERY (George Street, Hastings).

[The Bat sent is the Serotine, recognizable by its narrower wings, longer and narrower tragus than the Noctule, and with two premolars less in the upper jaw.—ED.]

BIRDS.

The present Status of the Hooded Crow in Southern Scotland.—Mr. A. C. Chapman’s note on the nesting of the Hooded Crow, *Corvus cornix*, in Northumberland (p. 227), is, I think, of more importance than he seems inclined to attach to it. Although nesting exceptionally much

further south than the locality given—*e. g.* in Yorkshire (Clarke and Roebuck), and in Essex (Miller Christy),—still its breeding in the eastern counties (at any rate, anywhere south of Perth, Forfar, and Kincardine) must be considered sporadic and exceptional. The latest book on breeding areas of British Birds ('Nests and Eggs of British Birds,' by C. Dixon) is in regard to this bird misleading; for under the heading *Corvus corone*, the writer says (p. 3):—"In Ireland it is rare and almost replaced by its close ally the Hooded Crow; the same remarks apply to Scotland, although it is not so scarce." Now, far from being scarce, it is quite a common bird in all the southern Scottish counties with which I am acquainted—Fife, Edinburgh, Linlithgow, Haddington, Peebles, and Northern Dumfries—while the Hooded Crow is merely occasional and sporadic. It is a curious fact, and one that almost leads to the idea that the black Crow is pushing northwards, and that the real Hooded Crow was once the prevalent form in the Scottish lowlands, that by gamekeepers, shepherds, and country people generally in that district the black Crow, *Corvus corone* is invariably called a "Hoodie." It used to puzzle me a good deal when at school in Fife, where several score of Hoodies' eggs were annually brought in, to understand why they should be so styled, seeing that no vestige of a hood was visible on any of the birds that laid the eggs. I have seen hybrids killed at the nest in the county of Edinburgh, but the gamekeeper considered them very uncommon. At an early spring roosting colony of forty or fifty birds, almost within the bounds of the city of Edinburgh, not one of the "Hoodies" was observed to have any grey about it. As regards the west, and especially the N.W. of Scotland, no doubt *Corvus cornix* is the prevalent form, but we have it on the authority of Messrs. Harvie Brown and Buckley ('Fauna of Argyle,' p. 89), that *Corvus corone* is "abundant on parts of the mainland" of Argyle.—HAROLD RAE BURN (31, Clare Road, Halifax).

March Cuckoos.—Nearly fifty years' experience has taught me the unwisdom of dogmatism; far be it from me therefore to assert that Cuckoos have not been heard or seen in this country in March, or any other unaccustomed month. Consequently, when interrogated on the subject, I very guardedly replied, "such a bird as a 'March Cuckoo' has no place in *my* experience," a statement of pure fact; but unfortunately I did not end there, and Mr. Grabham's courteous exposure of the weak spot in my armour is the legitimate result. The Editor has correctly interpreted my meaning (p. 225), but I should like to add that I was quite aware of the very occasional occurrence of birds of this species during summer in the reddish plumage of the first autumn; though as they are excessively rare in this country, it seemed to me hardly worth entertaining the idea that such birds had, on at least several occasions, been detected at a time when even the normal plumaged Cuckoo is not looked for. But perhaps I ought not to have stated that a Cuckoo in immature plumage in March was an

"obvious absurdity," but rather that it was "very remarkable" if true. I was led to the conclusion at which I arrived not alone by the description of the bird's appearance, but also by its flight and actions, which certainly in one of the cases reported this spring indicated the Hawk rather than the Cuckoo. So far as I know, all the rufous coloured adult Cuckoos hitherto met with have been females. May I add that early in last March I heard a Ring Dove—I doubt not a young and inexperienced bird practising its love song for the first time—which so much resembled the cry of the Cuckoo that it might readily have deceived a careless or inexperienced person. May I finish with a story of a Cuckoo written, and evidently credited by, a very "painful" and observant naturalist, a F.R.S., and valued correspondent of Gilbert White, to a lady of rank (in fact quite a high-life story) in the year 1790?—"My very estimable neighbour, Lady Walpole," says the writer, "informed me that her grandfather Hoskins, of Barrow Green, a few miles from Godstone, in Surrey, at Sir W. Hoskins' in the Christmas Holydays, heard a Cuckow singing in a hollow tree laid upon the fire. I am thus particular in the story," he adds, "because it is uncommon."—T. SOUTHWELL (Norwich).

Early Cuckoos in 1894.—Since writing my note on March Cuckoos (p. 190) I received undeniable evidence of the extraordinarily early arrival of the Cuckoo in North Oxon this spring. A neighbour, who is interested in, and has a good knowledge of, birds, heard the Cuckoo's note at Milcombe on April 1st, at about 7.30 a.m.; on the 2nd he saw two of these birds, and on the same day an old farmer heard it at Tadmarton, and remarked truly that it was three weeks or more before its usual time; several labourers heard it also. It was heard here by another farmer on the 5th, and by upwards of a dozen persons on the 8th. I did not happen to hear it myself until the 14th; but had I been at home on the 8th I should certainly have heard it on that day, for the people in the house said a Cuckoo was calling loudly all the morning. One was heard also at Kingham on the 8th. The 14th is six days earlier than I ever heard it before. Is it possible that the Cuckoos were deceived by a remembrance of the fine warm nesting season we had last year into the belief that England really had a summer, and so returned before their usual time? If so, they must indeed have been woefully deceived. For the dreary, dismal May, with little else but cold winds, frosts, and rain, which we have just experienced, seems so far likely to be followed by an equally miserable June.—O. V. AFLIN (Bloxham, Oxon).

The following note respecting the early appearance of the Cuckoo in Dumfriesshire may be of interest. On April 15th, while out walking on Lochar Moss, about a mile east of Newfield Farm, I distinctly heard the call of the Cuckoo. I made for the few scattered trees from whence it was evident the sound proceeded, and soon caught sight of the bird perched

upon the projecting branch of an alder. About a minute afterwards it flew from the tree and settled upon the support of a wire fence close by, where it was almost immediately followed by another Cuckoo, which came from an adjoining tree and settled near it on the same fence. I was close enough to observe that both birds were of the ashy-grey colour which denotes the adult bird.—HUGH MACKAY (33, King Street, Dumfries).

[Will some of our correspondents state whether in their experience it is a common occurrence, or not, for Cuckoos to call *while on the wing*. An instance of this is reported in the Natural History columns of 'The Field' of the 15th March last as evidence that the observer who stated that he had seen a Cuckoo in March was not mistaken.—ED.]

Short-eared Owls in Solway.—On May 24th I once more spent another long day in rambling through a corner of that delightful region of Galloway known as the Southern Highlands, a country not yet known to the touring public, and that has been but casually investigated by a few field naturalists, mostly botanists and geologists. Here the last of the southern outposts of the Ptarmigan were occupied till well into the present century; the Golden Eagle nested till far on in the sixties, the Osprey having ceased to breed here only a few years sooner. The Peregrine and the Buzzard still frequent its precipices, and the Dotterel nests annually on its mountain shoulders, while round the margins of its tarns and lochs the Dunlin breeds in numbers, and the young of the Greenshank have been seen. The district is not likely to remain much longer a *terra incognita*, for in Mr. Crockett's very popular novel of 'The Raiders' most of the scenes are laid within its picturesque bounds, which bids fair to send a crowd of tourists into new haunts. But I am getting quite away from the subject of my note. Between lochs Trool and Dee we noted at least four pairs of Short-eared Owls on the wing, quartering the ground in the manner which their recent great immigration has made familiar. Eastwards of loch Dee a solitary individual of this species was fiercely assailed by a pair of Carrion Crows, which were flying alternately at it. We watched the fight for a long time, during which the Owl acted strictly on the defensive, but apparently tiring of that game, it sought to escape its assailants by a circling upward flight, and the three were finally completely lost to sight high above the summit of Meikle Millyea. The pair of corbies returned to their nest in about ten minutes in a particularly vociferous mood. During our ramble of some seventeen miles neither my companion nor I ever saw a single Vole, and none of their workings that could be said to be quite recent. It is rather singular to find even this small number of Short-eared Owls still there, when they have disappeared, along with the voles, over the remainder of the great extent of country that was under the domination of the plague. On the sheep farms of the Galloway hills the voles found their western limit as a plague, and they were a year or two later than elsewhere

in reaching a predominant abundance. At no time did these lands present the same bare, verdureless, wind-blown aspect as did the Dumfriesshire uplands. Very possibly the Short-eared Owls referred to may have remained to prey upon a vole colony that still exists somewhere amongst the glens betwixt Trool and Dee. — ROBERT SERVICE (Maxwelltown, Dumfries).

Great Northern Diver choked by a Gurnard.—Early in April a Great Northern Diver, *Colymbus glacialis*, was picked up on the shore opposite Orchardton by one of the keepers there, and Mr. Robinson Douglas informs me that on examination it was ascertained that it had been choked by a Grey Gurnard, *Trigla gurnardus*, which was still sticking in the bird's gullet.—ROBERT SERVICE (Maxwelltown, Dumfries).

[We have not unfrequently met with instances in which Kingfishers and Little Grebes have been choked in their endeavour to swallow the River Bull-head or "Miller's-thumb," *Cottus gobio*, but we never heard of a Cormorant being choked by a fish, nor have we before heard of such an accident happening to a *Colymbus*. The gullet in these birds is so dilatable that such a mischance probably happens but rarely. In the instance now reported the long humeral and opercular spines of the fish, and the strong and rough dorsal fin-rays (the second of which exceeds in length the depth of the body beneath), no doubt caused the terrible struggle which ended fatally to both bird and fish.—ED.]

Lesser Redpoll breeding in Somersetshire.—I notice your remark (p. 228) with regard to the Lesser Redpoll. I thought mine was the first instance known of this bird nesting in Somerset, but in the 'Proceedings' of the Somersetshire Archæological and Natural History Society for 1893, which I have since seen, I find that the Rev. Murray A. Mathew, in his "Revised List of the Birds of Somerset," remarks that it is a resident in limited numbers, that he has seen it in the summer time near Frome, and once had a brood of young birds in his garden at Buckland Dinham.—H. ST. B. GOLDSMITH (King Square, Bridgwater).

Lesser Redpoll breeding in Somerset.—I have read with much pleasure Mr. Goldsmith's remarks (p. 228) on the nesting of the Lesser Redpoll in Somerset, and send you some notes I have collected on this subject. I found a nest of this species in the Lansdown district, Bath, on May 6th, 1893. It contained four eggs, and was placed about eight feet from the ground, on the end of a fir-bough. The old bird (the only one visible) flew round in a state of great excitement, calling continuously. Having written to the Rev. R. Chichester, of Prior Park College, Bath, for information about the nesting of the Lesser Redpoll in the district, he replied:—"Until this season I had no idea the Redpoll (*L. rufescens*) built here. I have found two nests, one on May 14th, the other on May 21st.

The first was in an apple-tree in an orchard between Coombe Down and Midford, at a distance of ten feet from the ground. The nest was beautifully made of small twigs and sticks, and lined inside with vegetable down as white as snow. It contained four eggs, highly coloured but poorly marked, and quite fresh. The second nest was taken a week later, on the bank of a stream which runs through Midford near Tucking Mill. It was built in a willow-tree overhanging the brook. The nest was composed of twigs, lined with vegetable down, and in this case with plenty of hair. There were five eggs, and incubation had commenced. There were Brown Linnets breeding in each case in close proximity."—C. B. HORSBRUGH (4, Richmond Hill, Bath).

Pheasant nesting in a Tree.—With reference to the Pheasant's laying in a nest in a tree near Barnwell, as recorded in a note from Miss F. (not T.) Wickham to me, and forwarded, at her request, for the last number of 'The Zoologist' (p. 227), I heard yesterday from Mr. Henry Wickham, of Barnwell Castle, that there were nine eggs in this nest when first found, that three young birds were recently found dead at the foot of the tree in which the nest was situated, and as all the eggs were hatched, it is hoped and believed that the parent bird has taken off the remainder of her brood in safety.—LILFORD.

[Instances of Pheasants nesting in trees are not so uncommon as might be supposed. Several such cases are noticed in Mr. Tegetmeier's work on Pheasants (2nd edition, 1881, p. 10), the height from the ground varying from nine to twenty-five feet. In these instances the hen Pheasant had appropriated deserted nests of the Wood Pigeon, Owl, Sparrowhawk, and Squirrel, and in several cases the young of some of them had been brought down in safety, though many had been killed by falling.—ED.]

Dotterel in Haddingtonshire.—On May 22nd I saw a flock of eight Dotterels, *Endromias morinellus*, at a place called Dirleton, in Haddington. They were feeding on some ploughed land, and I was told that they had been there some days. Is it not rather late, considering the early season, for these birds to be in flocks?—HARRY F. WITHERBY (Musselburgh, N.B.).

Whimbrel in the Midlands.—I have recently seen two Whimbrels which were shot in the north-eastern corner of Buckinghamshire, not far from the river Ouse, in the second week of May—about the 13th—15th. Although the Whimbrel passes (in N.E. and S.W. directions) over the southern Midlands at the periods of migration, and is observed with tolerable regularity while on passage, it very rarely alights in these counties. When it does so it is, I believe, always in spring. At all events, I have no record of the Whimbrel being shot or observed on the ground in Oxfordshire in August or September. This observation holds good of Northampton

shire also. Lord Lilford writes that although it passes along the Nene valley in considerable numbers on the southern migration, and again in much fewer numbers in May, yet in his experience he never saw a Whimbrel on the ground in Northamptonshire, and he is convinced that on the southern migration they hardly ever alight near Lilford, although he has been assured of a few instances of their doing so in May. The only example actually killed in Northamptonshire which he was able to record was shot at Thorpe Mandeville on May 16th, 1881, as noted by me at the time in the 'Midland Naturalist' (*vide* "Notes on Birds of Northamptonshire," pp. 309, 310). In Mr. Clark-Kennedy's 'Birds of Berkshire and Buckinghamshire,' p. 143, the Whimbrel is referred to as less common than the Curlew, "but occasionally a specimen is killed on the river [Thames] in spring and autumn." A correspondent also informed the author that "a few specimens of the Whimbrel are seen almost every winter [?] on the banks of the reservoirs here." But as no definite instance of the occurrence of the bird is given with locality and date, we may fairly consider that the work quoted does not afford conclusive evidence of the Whimbrel alighting in the southern Midlands on the autumn migration. The only instances of the Whimbrel being seen on the ground, or being shot in Oxfordshire of which I can give exact dates are the following:—Bloxham, April 29th, 1880; Clattercote Reservoir, one seen, May 9th and 10th, 1885; Thame, May 21st, 1886. In April, 1859, one was shot at Wormleighton Reservoir, Warwickshire.—O. V. APLIN (Bloxham, Oxon).

Shag on Somersetshire Coast.—I am enabled to add the Shag (*Phalacrocorax graculus*) to the list of Somersetshire birds. A specimen of this bird was killed between Brean Down and the mouth of the Parrett on October 20th, 1892, and is preserved in the collection of Mr. Tucker, who received it in the flesh from the fisherman who shot it.—H. ST. B. GOLD-SMITH (King Square, Bridgwater).

Razorbills and Puffins cast ashore.—In the early part of March last some Razorbills and Puffins, waifs of the sea cast up on the shore, were noticed by the Rev. E. P. Larken about the tide-mark near Boulogne. On the English side of the Channel, at the same time, some Razorbills and a few Guillemots, but no Puffins, were to be seen on the shore in the vicinity of Brighton, starved, as often happens, from a continuance of rough weather, which had driven the fish upon which they subsist too deep down into the sea for diving birds to catch them (*cf.* Proc. Nat. Hist. Soc. Glasgow, vol. i. p. 4). Such birds, if not already dead, are always moribund, and I am given to understand, when taken to the Brighton Aquarium, never recover, or at best live but a very short time. To prosper in an aquarium the *Alcidæ* should be netted, and have live fish to eat, for to give them what is not fresh is at all times dangerous. When I was last at

Brighton, on March 28th, there were two Razorbills in the Aquarium, which had lived there nearly three years. When they dived it could immediately be seen how tightly compressed all the plumage was by the weight of water, the vacuum made by the air in and beneath the feathers encasing the whole body of the bird as in an envelope of silver. As the air streams away, expelled from the Razorbill's tail, it rises in a beautiful network of bubbles to the surface. It is hardly correct to state as some have done that the action of the wing under water is precisely the same as in flight, because it is never fully extended, the beats are not so rapid, and the motion is sustained with labour. Razorbills are probably able to see to a great depth in still water, for when searching for food in their tanks it is to be noted that they merely swim with about half the head immersed, just enough for the eyes to be under the surface and no more.—J. H. GURNEY (Keswick, Norwich).

Marsh Harrier nesting in Oxfordshire. — In the interests of the Oxfordshire ornithological record, allow me to say that I hope Mr. Swann, or his informant, will see his way to give us more precise information about the Marsh Harrier breeding in this county (p. 227). Those ornithologists who know Oxfordshire will have read with no little astonishment that this Harrier, hardly known even as an occasional visitor nowadays, should have actually nested so recently as July, 1890. I only know one locality "near Oxford" in the least degree suitable to the requirements of this species. It would be interesting to know the exact locality of the nest; also how many eggs it contained, how they were identified, and what became of the birds. From Mr. Swann's note it appears that his informant, from whom he purchased the egg, was not very clear in his remembrance of the nest. Unless the birds were satisfactorily identified it seems more probable that they were Montagu's Harriers—supposing it to be certain that they were Harriers at all. I hope Mr. Swann will not consider this note as an unduly sceptical one, and will understand that it is written solely in the interest of our county avifaunal history.—O. V. APLIN (Bloxham, Oxon).

Whiskered Tern in Dumfriesshire.—On the 28th May last a male specimen of the Whiskered Tern, *Hydrochelidon hybrida*, was forwarded to me from Friars Carse, with the information that it had been shot on marshy ground near the Carse loch, about eight miles from Dumfries. As I had never seen this bird before, I examined it in the most careful manner, referring occasionally to my books, and comparing it with specimens of the commoner Terns in order to ascertain the precise identity of the bird before sending you this note. Convinced that it was the Whiskered Tern, I gave the bird in the flesh to Mr. Robert Service, of Maxwelltown, Dumfries, for examination, and he agreed in the identification. After skinning it I returned the body to Mr. Service, so that he might examine

the stomach, which he afterwards informed me contained semi-digested portions of the fresh-water shrimp (*Gammarus pulex*). The length of the bird is $11\frac{1}{2}$ in., wing 9 in. Referring to Mr. Saunders' 'Manual of British Birds,' I find that up till 1889 only six specimens have been recorded, four of which were obtained in England, one in the Scilly Islands, and one in Ireland. The last specimen was obtained near Plymouth in 1865, and unless there is a record since 1889, which has escaped me, I presume the specimen now in my possession is only the seventh obtained in the British Islands. It is a new and interesting addition to the Scottish list.—HUGH MACKAY (33, King Street, Dumfries).

Robin nesting in Church.—The following may interest some of your readers. On March 31st, on going to clean the chapel, the woman found on one of the book-ledges a heap of rubbish, evidently brought by a bird; she cleared it away, but on going again the following Saturday, April 7th, found a still larger heap and a perfectly finished Robin's nest. This also, I am sorry to say, was removed; but on hearing of it I had the nest put back in the same place, but without any of the accompanying *débris*. On going to see it this morning I was pleased to find the bird sitting on four eggs. As the nest is not more than one foot from persons in the pew it will be interesting to see whether she continues to sit during service. If she should successfully rear her brood I will let you know, should you care to insert this.—H. W. WYKEHAM (Thame Park, Thame).

Varieties of Rooks.—At Annesley Park there are three rookeries, and during forty years there has never been a variety seen. Last week the shepherd saw what he thought were two white pigeons, but on looking at them more closely a second time he found they were Rooks. He informed the park-keeper, who thereupon shot them. They were strong fliers, in full feather, and as white as snow, with white bills and legs and pink eyes. The owner, Mr. Musters, returned home the same afternoon, and on going to another rookery in the park shot two pied ones, pale yellow and black, with feet and legs mottled. Another has since been seen in a third place. It is very curious that so many varieties should occur at one time in a locality where none had been seen for so many years.—J. WHITAKER (Rainworth, Notts).

Nesting of the Dipper.—I have known the same pair of Dippers (*Cinclus aquaticus*) to build for the last fifteen years under an archway close to my home. There is no mistaking their identity, for when a lad I often used to catch the hen bird, which has only one leg. Their nesting place is well known to boys in the neighbourhood, hence they seldom have the good fortune to get a brood reared and flown. This year I found their nests as follows:—April 11th, nest containing five eggs; 12th, nest and eggs gone; 24th, nest containing five eggs; 30th, nest and eggs gone;

May 10th, nest containing four eggs; 11th, nest and eggs gone; 18th, nest not quite built; 19th, nest pulled out again; 22nd, hole lined thinly with moss and containing one egg; 23rd, egg gone. Thus three complete and two incomplete nests were built this year, and fifteen eggs were laid. It cannot have taken the pair more than six or seven days to build either the second or third nest. The first two nests were built splendidly; the third was built loosely; the fourth and fifth were never finished, although an egg was laid in it. The pilfering of their eggs and the destroying of their nests are repeated year after year, yet I am sure from my own observation that they have never forsaken the place.—JOHN R. DENWOOD (Kirkgate, Cockermouth).

Variety of Waterhen.—Last summer a keeper told me he had seen a white Waterhen on the lake below the house here, but though a good look-out was kept it was never seen there again. On May 28th I was told there was a curious Waterhen on a pond on the roadside about half-a-mile off. On walking there I saw the bird. The man told me it came there last summer, and was about all the autumn, but left in the winter. It returned about six weeks ago. I got close to it, and found it to be of a pale tawny colour; the back sandy yellow, shot with pale slate and grey, the wings much abraded, with all the finer portions of the feathers worn away; the head pale grey; neck and breast greyish blue. The bird was well grown, and has paired with a hen bird of the normal colour which is now sitting, and I am anxious to see how the young turn out as regards colour. The pond is on the roadside, very bare, no weeds, and only a bit of old hedge at one side. Scores of people pass the edge of it, and dozens of carts every day. There are two small farms within twenty and fifty yards where dogs are kept. Why these birds should have left the larger and quieter pools here, surrounded by covert and abundant food, is a mystery to me.—J. WHITAKER (Rainworth, Notts).

FISHES.

Sapphirine Gurnard in the Solway Firth.—I entirely concur in the editorial suggestion that the Sapphirine Gurnard might naturally be expected to occur in the Solway Firth, although this species generally prefers much deeper water than is to be found in the upper parts thereof. But I recorded its occurrence expressly to enable the readers of 'The Zoologist' to add the species to the list of fishes found in our territorial waters as contained in the 'Fauna of Lakeland,' simply because the continued absence of the species from the list might suggest the fallacy that this Gurnard avoided our coasts. I could not include the species in our fish-fauna until I had ocular demonstration of its occurrence. The printer makes me say that the largest fish of this species caught locally weighed $3\frac{3}{4}$ lbs.; but this is a mistake. What I wrote was that it weighed *seven*

pounds and three-quarters. There is nothing extraordinary about this weight; but it is that of a large hen fish in good condition.—H. A. MACPHERSON (Carlisle).

VERMES.

A Bifid Worm.—In April last Mr. Gilchrist Clark, of Speddoch, gave me one of those rare abnormalities—a worm with two tails. It had been found amongst some worms kept for angling purposes. The species was the ordinary Brandling, *Lumbricus fætulus*. Considerably less than a dozen instances of this curious malformation in worms are on record, and it so happens that, including the specimen under notice, no less than four of these have passed through my hands. So many as four having been in the possession of one individual would seem to indicate that this “freak” is not so rare as is generally supposed. I have presented this specimen to the Museum of Science and Art in Edinburgh.—ROBERT SERVICE (Maxwelltown, Dumfries).

[The Brandling (diminutive of Brand) is so called from its colour. It may be of interest to note here that in many dictionaries Izaak Walton is quoted as the first English writer who mentions the Brandling by this name (1653), but the word occurs in Barker's ‘Art of Angling,’ 1651.—ED.]

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

June 7th.—Mr. C. B. CLARKE, M.A., F.R.S., President, in the chair. Messrs. W. E. Bailey, F. W. Hildyard, and A. Zietz were elected.

The President nominated as Vice-Presidents for the year Messrs. J. G. Baker, W. Carruthers, and F. Crisp, and Prof. C. Stewart.

Dr. John Lowe communicated the results of observations made by him in Madeira and Teneriffe on the habit in certain insectivorous small birds belonging to the genera *Sylvia*, *Phylloscopus*, and *Parus* (of which specimens were exhibited) of puncturing the calyces of flowers for the purpose of attracting insects on which they feed. An interesting discussion followed, in which the President, Rev. G. Henslow, and others took part.

Mr. Carruthers exhibited a series of photographs of the celebrated Cowthorpe Oak in Yorkshire, taken at long intervals, commencing with a reproduction of Dr. Hunter's engraving of 1776, and made remarks upon the rate of growth and decay, and probable duration of life in this tree.

Mr. Raymund Dowling exhibited and made remarks upon a dwarf Glaucous Pine, and some curiously shaped *Trapa* fruits from Japan.

Mr. Thomas Christy exhibited specimens of two species of *Polygonum* (*P. sachalinense* and *P. cuspidatum*), of value for forage, and pointed out

that the roots of the mature plants, when cut, are in the former species of a whitish colour and in the latter of a bright yellow, enabling the two to be readily distinguished.

A paper was then read by Sir John Lubbock, Bart., M.P., F.R.S., "On Stipules and the Protection of Buds." A discussion followed, in which the Rev. G. Henslow, Mr. A. W. Bennett, Prof. Marshall Ward, and Mr. John Fraser took part.

Before the meeting adjourned, the President announced that a bust of Charles Waterton, the Yorkshire naturalist, and author of 'Wanderings in South America,' had been presented to the Society by the Trustees of the late Mrs. Pitt Byrne (*née* Busk). This bust was executed in 1865 (the year in which he died, at the age of eighty-three), by the late Mr. Waterhouse Hawkins. It is an excellent likeness, and the only bust of him in existence. The only accessible portrait of him is a small engraving by Adlard, which forms a frontispiece to the third volume of the 'Essays on Natural History,' from an original oil painting by Charles W. Peale, made in Philadelphia in 1824, when Waterton was in his forty-second year. A comparison of this portrait with the bust shows a remarkable correspondence, allowing for the forty years which elapsed between the two sittings.

June 21st.—Mr. C. B. CLARKE, F.R.S., President, in the chair.

Messrs. F. W. Hildyard and H. A. Cummins were admitted, and Mr. W. Gardner was elected a Fellow.

Mr. G. Brebner exhibited and made remarks upon specimens of *Scaphospora speciosa*, Kjellm., a seaweed new to Britain, describing, with the aid of lantern-slides, the structure and mode of fructification in this and other allied Algæ.

Mr. J. R. Jackson exhibited the cone of a stone pine, *Pinus pinea*, Linn., which had been picked up by the Comte de Paris in the Coto del Rey, Seville, and which had sprouted and continued to grow for a month afterwards. This peculiarity, which had been often noticed in the larch, was said to be of rare occurrence in the pine.

Mr. Thomas Christy exhibited and made remarks upon a small-berried coffee-plant from Inhanbane, East Africa, somewhat similar to a variety from Sierra Leone and other parts of the West Coast. It was said to be valued for its fine aromatic bitter taste which made it useful for flavouring beans and other material ground up and sold as coffee.

Mr. A. B. Rendle gave an abstract of a paper upon a collection of plants from East Equatorial Africa, brought home by Dr. J. W. Gregory and Rev. H. Taylor, amongst which were several new species.

A paper followed, by the President, "On Tabulation Areas," in which the views of Dr. A. R. Wallace and others on geographical distribution were discussed, and the best mode of tabulating results considered. After some discussion, the meeting adjourned to November 1st.

ZOOLOGICAL SOCIETY OF LONDON.

June 5th.—Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of May, and made some remarks on the chief animals which he had observed during a recent visit to the Zoological Gardens of Rotterdam, Amsterdam, Hanover, Berlin, and Hamburg.

A communication was read from Dr. E. A. Goeldi, containing critical remarks on the Opossums of the Serra dos Orgaos, Rio de Janeiro, Brazil.

Mr. O. Thomas gave an account of the Gazelles of Algeria, chiefly based on specimens brought home by Sir Edmund Loder, and distinguished three species, *Gazella dorcas*, *G. cuvieri*, and *G. loderi*, the last being a new species of which examples had been obtained by Sir Edmund Loder in the sand-hills three days south of Biskra. A fourth Gazelle, of which a skin and skull had been bought by Sir Edmund Loder in Algiers many years ago, was referred with some doubt to *Gazella corinna*, the Corinne of Buffon.

Sir Edmund Loder then gave an account of his expedition in search of *Gazella loderi*, called by the Arabs "Reem," and stated what he had learnt of its habits and distribution. He concluded with some remarks on the period of gestation in the Indian Antelope, as observed in captivity, from which it appeared that this animal produces young twice a year, and that the period of gestation is five months.

Prof. Howes communicated some notes by Dr. W. R. Benham on a particularly abnormal vertebral column of the Bull-frog, *Rana mugiens*, and on certain variations in the anurous column of this frog.

Mr. Lindsay Johnson read a communication on the form of the pupil in the *Felidæ*, and stated that, after an examination of the eyes of 180 domestic cats, as well as the eyes of all the species of *Felidæ* in the Society's Gardens, he had come to the conclusion that the natural shape of the pupil in *Felis* is circular. Although under various degrees of light he found every shape from the circle through all degrees of oval to a perfectly vertical line, yet instillations of atropine or cocaine solutions caused every pupil to become a true circle. The younger the cat the greater the tendency in the pupil to become pointed oval in ordinary light, and, conversely, the older the cat the more frequently is the pupil circular. Brilliant light always caused contraction to oval, and direct sunlight to a thin line in the smaller *Felidæ*; in the larger species, Mr. Johnson had frequently found the pupils contract to a small circle. Suddenly alarming a cat had the effect of momentarily dilating the pupil; while in sleep the pupil was always contracted. This communication was illustrated by models and diagrams.—P. L. SCLATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 6th, 1894.—HENRY JOHN ELWES, F.L.S., President, in the chair.

Dr. K. Jordan, of "The Museum," Tring, and the Hon. Nathaniel C. Rothschild, of Tring Park, Tring, were elected Fellows of the Society.

Mr. W. F. H. Blandford exhibited a series of eleven male specimens of *Rhina barbirostris* from British Honduras, of which the largest and smallest examples measure respectively 60 and 17 mm. The difference in bulk, supposing the proportions to be identical, is as 43 to 1. He remarked that this variation of the size is especially common in the *Brenthidæ*, *Cossonidæ*, and other wood-boring Coleoptera.

Mr. A. J. Chitty exhibited specimens of *Cardiophorus equiseti* taken near Braunton, on the north coast of Devon, in May, 1891.

Mr. McLachlan exhibited for Mr. J. W. Douglas male specimens of a Coccid (*Lecanium prunastri*), bred from scales attached to shoots of blackthorn (*Prunus spinosa*) received from Herr Karel Sulc, of Prague, and stated that the species was common on blackthorn in France and Germany, and should be found in Britain.

Lord Walsingham exhibited a series of *Cacoecia podana*, Scop., reared from larvæ feeding on *Lapageria* and palms in Messrs. Veitch's conservatories, Chelsea, including some melanic varieties. The Honble. Walter Rothschild stated that he had taken the species on lime.

Mr. C. Fenn exhibited a series of *Selenia lunaria*, bred from one batch of eggs, which included both the spring and summer forms; and also two unforced specimens, which emerged in November. He observed that the variation between the two emergences, viz., spring and summer, is considerable, and also the range of variation *inter se*, especially in the spring form; but it is remarkable that the summer form has one or two representatives among those of the spring emergence. The parent female was taken at Bexley in May, 1893.

Mr. F. Lovell Keays exhibited a variety of *L. alexis* (female), having the marginal ocelli on the hind wings without the usual orange-coloured lunules. The specimen was captured at Caterham on May 22nd, 1894, and was the first example of the species observed by the captor this season.

Mr. J. H. Durrant exhibited a series of *Steganoptycha pygmaea*, Hb., taken at Merton, Norfolk, between the 25th March and the middle of April last.

Mr. H. Goss read an extract from a report from Mr. J. R. Preece, H.M. Consul at Ispahan, to the Foreign Office, on the subject of damage caused to the wheat crop in the district of Rafsinjan by an insect which was called "Sen" by the natives, and which he described as "like a flying bug, reddish olive in colour, with heavy broad shoulders." Dr. Sharp said that in the absence of a specimen it was impossible to express an opinion as to the species.

The Rev. Canon Fowler exhibited for Miss Ormerod specimens of *Diloboderus abderus*, Sturm, *Eucranium arachnoides*, Brull., and *Megathopa violacea*, Blanch., which she had received from the La Plata district of the Argentine Territories, where they were said to be damaging the grass crops.

Mr. Hampson raised an important point as to what was the legal "date of publication" of Part I. of the Transactions of the Society, 1894. He pointed out that the question of the priority of the names of certain new species therein described would depend upon the date of publication. Upon this a long discussion ensued.

Professor Franz Klapálek, of Prague, communicated a paper entitled "Descriptions of a new species of *Raphidia*, L., and of three new species of Trichoptera from the Balkan Peninsula, with critical remarks on *Panorpa gibberosa*, McLach."

Lord Walsingham then took the chair, and a Special General Meeting, convened under Chap. XVIII. of the Bye-Laws, was held.—H. Goss & W. W. FOWLER, *Hon. Secs.*

NOTICES OF NEW BOOKS.

Five Months' Sport in Somali-land. By LORD WOLVERTON. With illustrations from photographs by COLONEL PAGET. 8vo, pp. 108. London: Chapman & Hall. 1894.

ANOTHER book on African big-game, the scene of adventure this time being in Somali-land. In November, 1892, Lord Wolverton and Colonel Arthur Paget, with Mr. Vine as cartographer, made their way to Aden, and proceeding thence to Berbera, purchased camels for transport of their food, water and ammunition, and journeyed some 250 miles southward as far as Galadi and Barri, on the River Shebeyli. The expedition occupied five months, and in the volume now before us (the thinnest ever published on African sport and travel), Lord Wolverton has jotted down the most noteworthy adventures of the party, which his brother sportsman has helped to illustrate.

The travellers were evidently not much impressed with the resources of Somali-land, which depend first on the Goats, which make very good skins; secondly, on the herds which will *in the future* supply food; and thirdly, on Ostrich feathers, and gum which is said to be of a superior quality. The only indication of mineral wealth was furnished by the compasses which, when

placed upon the ground in certain localities, indicated by their oscillations the presence of iron ore.

Apropos to compasses, it was curious to notice how the natives were entirely independent of such instruments. Asked to point in the direction of Berbera, Zeilah, or other places of importance, they did so, and were invariably right. Their power also of finding the way, even to a quarter of a mile of the line of march, was wonderful. Being out one day on the fresh track of a Rhinoceros, and following it for four hours in what the author had imagined to be a contrary direction to that in which the caravan was moving, he was surprised, when giving up a hopeless stern chase, to find from his *shikari* that he was quite close to camp. The sense of smell too in these untutored savages must be very extraordinary. On one occasion the *shikari* scented a wood fire at the camp, which was two miles distant, and by going straight to it saved the author and his companions (who thought the camp lay in another direction) much time and unnecessary fatigue.

The chief feature of the expedition seems to have been the number of Lions met with. Sixteen were killed in the five months, and of these five were shot in six days.

It is to be regretted that there was no naturalist of the party, for an opportunity was thus lost of making some addition to our knowledge of the fauna of Somali-land. The author writes of shooting "Partridges" and "Pheasants" when he means Sandgrouse and Francolin; refers to varieties when he means species; and employs the Latin specific names as if they were native names. Thus he mentions (p. 55), "Shooting as we marched a considerable number of *sœmmeringi* (*sic*), a species of Gazelle which lives on the open plains"; why not have said "a number of Soemmering's Gazelle"? This species, of which a figure is given on p. 56, is lettered "Owl, or *sœmmeringi* Gazelle," instead of "Aoul, *Gazella Soemerringi*." Further on allusion is made to the shooting of a "Giranook Owl," a phonetic rendering of two Somali names, which is misleading. From the figure of the "Giranook Gazelle," which is given on page 96, it appears that the species is Waller's Gazelle, of which the Somali name is "gerenook." Nor does the author distinguish the two species of Koodoo, *Strepsiceros kudu* and *Strepsiceros imberbis*. The only measurements given of Antelope horns are those of two pairs of

Oryx horns, which were respectively 32 and 34 inches in length; but these are only average specimens compared with some that have been procured in Somali-land, the longest on record measuring 39 inches. A recumbent figure of Grevy's Zebra, of which seven were shot, is given on page 91, but is unfortunately lettered "Zebra grevu." The "four big Geese," one of which was shot (p. 87), were not identified; nor is the big fish named which was caught with hook and line, and weighed 20 lbs. (p. 84). A large Snake, called *abassa* by the natives, stated to be poisonous, and said to be new to the British Museum collection, is not named, and as neither measurements nor description are given, the reader is left altogether in doubt concerning its identification.

The author would have done well to have had these points cleared up before publishing his narrative, which, as it stands, is a mere record of shooting, and adds nothing to what was previously known concerning the natural history of the country traversed.

The Hawks and Owls of the United States in their relation to Agriculture. Prepared under the direction of Dr. HART MERRIAM by A. K. FISHER. U. S. Department of Agriculture. Bulletin No. 3. 8vo, pp. 210. With 26 coloured plates.

AMONGST the many useful volumes issued by the United States Department of Agriculture, and distributed so liberally on both sides of the Atlantic, we have seen none more attractive than that with the above title. It is brimful of facts, and illustrated in a way that will make it extremely useful to those for whom it is primarily intended, the object being to show that birds of prey, commonly looked upon as enemies to the farmer, and indiscriminately destroyed whenever occasion offers, really rank among his best friends, and, with few exceptions, should be protected.

The statistics here published concerning the food of Hawks and Owls in America are derived from the critical examination by scientific experts of the actual contents of about 2700 stomachs of these birds, and may therefore be fairly regarded as a reliable exposition of the natural food of each species.

Dr. Hart Merriam remarks that of the seventy-three species

and subspecies dealt with in this volume, only six are really injurious by reason of their destruction of game, poultry, and pigeons, and of these the two chief offenders are the Sharp-shinned Hawk (*Accipiter velox*), which is very like our Sparrowhawk (*Accipiter nisus*), and Cooper's Hawk (*Accipiter Cooperi*), a larger and more powerful bird of the same genus. But even these two have some redeeming quality, for they have learnt that the English Sparrow is not only an acceptable article of food, but is also readily procurable. Consequently of late years these Hawks have been much more common during the winter months in the larger parks of cities where Sparrows abound.

The actual number of specimens examined was 2690. Of these 169 contained the remains of poultry and game birds; 463 of other birds; 966 of mice; 397 of other mammals, and 623 of insects. Omitting the half dozen species above referred to, the total number of specimens amounted to 2212. Of these 78, or $3\frac{1}{2}$ per cent., contained the remains of poultry or game; 257, or 11 per cent., of other birds; 945, or $42\frac{1}{2}$ per cent., of mice; 309, or 14 per cent., of other mammals; and 599, or 27 per cent., of insects.

The useful information contained in this volume does not end here. As it is intended to be of practical benefit to agriculturists, short descriptions are given of all the species of Hawks and Owls known to inhabit the United States, together with their respective measurements, so that with this aid, and the coloured figures of six and twenty of the more notable species, there ought to be no difficulty in distinguishing friends from foes. For the benefit of those whose interest in the subject extends beyond its economic side, a short account of each species is also given with particulars as to its characteristic habits and nesting. The volume accordingly is one of very general interest, and the excellent coloured plates by Mr. Ridgway add considerably to its value.

Ornithology in relation to Agriculture and Horticulture. By various writers. Edited by JOHN WATSON. Post 8vo, pp. i—viii; 1—220. London: W. H. Allen & Co.

WHILST naturalists in America have been busy collecting facts under this heading, observers in this country have not been

behindhand in contributing to the general literature of the subject. In the little volume with the above title we have a series of essays not only on Hawks and Owls, but also on Rooks, Crows, Wood Pigeons, Starlings, Sparrows, and other small birds, as well as on the Pheasant, Partridge, and Grouse.

We cannot say that this collection is particularly well edited, either as regards arrangement of material, or editorial notes, which in the entire volume do not amount to more than half a dozen in number; but we have at all events an expression of views from such good observers as Miss Ormerod, Messrs. Aplin, Gurney, Nelson, Southwell, Tuck, and other contributors to this Journal, all of whose essays contain useful and reliable information. Several of the articles appear to have been previously published in various periodicals, which causes certain statements to appear somewhat out of date, and the editor would have done well to have indicated when and where they originally appeared.

The Birds of Staffordshire: with illustrations of local Bird-haunts.

By ALEXANDER McALDOWIE, M.D., Vice-President of the North Staffordshire Naturalists' Field Club. 8vo, pp. 150. Printed for Private Distribution. 1893.

DR. McALDOWIE has rendered good service to Ornithology by printing these collected observations on the birds of a county concerning which we have had no comprehensive work since the appearance some fifty years ago of Mr. Garner's 'Natural History of the County of Stafford.' But, as will be seen by the two pages of bibliography at the end of the present volume, there have been a certain number of fragmentary contributions printed from time to time in the pages of local Natural History journals and county histories. From these and other sources (such as Plot's well-known work, 1686, and Ray's translation of Willughby's 'Ornithology,' 1678) Dr. McAlldowie has compiled a goodly catalogue of county birds, adding remarks of his own. But it seems to us that a number of species have been included on very slender evidence. For example, there appears to be little or no ground for ranking amongst Staffordshire birds such species as the Dartford Warbler, Aquatic Warbler, Bearded Tit (though this species was thought to have formerly frequented Aqualate Mere), Richard's

Pipit, Mealy Redpoll, Pine Grosbeak, Black Woodpecker, Roller, Marsh Harrier, Little Crake, and Roseate Tern.

The greatest "ornithological ornament of the county" is stated to be the Great Crested Grebe, and the meres in the West of Staffordshire, together with those of Shropshire, form one of the chief breeding areas of this species in the British Islands.

The accounts given by Willughby and Plot of the great breeding place of the Black-headed Gull at Norbury, in this county, are of course quoted under the head of this species (pp. 135-136), and Ray's note of his visit to the spot in May, 1662, when on his way from Stafford to Nantwich ('Itinerary,' pp. 216-217). But we are surprised to read that since Dickenson wrote in 1798 to the effect that since 1794 scarcely a Gull has bred in that neighbourhood, "there is no record of any more recent nidification of the Black-headed Gull in this county."* Dr. McAlldowie does not tell us whether this species has actually ceased to breed in Staffordshire for exactly a century, or what is its precise status in the county at the present time.

It is curious, too, that the author has not been able to find any record of the former occurrence of the Bustard on Cannock Chase. Possibly in the days when Bustards frequented the wolds of Lincolnshire and Yorkshire, and the downs of Berkshire, Wiltshire, Hants, and Sussex, the heather upon Cannock Chase may have been too long, and the ground too hilly, for a bird which trusts so much to its legs and sharp vision in the open plains.

The seven illustrations with which this volume is embellished are, with one exception, from photographs, and give a good idea of some of the more notable bird-haunts to be met with in the county. The views given are the Raven's Clough (at the bare and rugged east side of Cloud End), the Trent near Burton, the summit of the Roaches (the breeding place of the Ring Ouzel and Curlew), Dane Valley (the haunt of the Dipper, Grey Wagtail, and Sandpiper), Cannock Chase, Dovedale, and Aqualate Mere the favoured resort of the Great Crested Grebe.

* This colony is referred to in an article on "Gulleries" published in 'The Field' of 2nd Feb., 1884.

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THE ORIGIN AND PURPOSE OF THE HORNS AND ANTLERS OF RUMINANTS.

By ALLAN GORDON CAMERON.

(Concluded from p. 252.)

III. STRUCTURE.

HISTORY favours the view that horns and antlers were aboriginally protective weapons, and an examination of their structure reveals the fact that they are protective in a double sense—as an adjustment, on the one hand, to preserve the species from destruction by external enemies in the struggle for life, and, on the other hand, to save it from self-destruction through sexual combat in the struggles of rivalry for possession. I propose to take these points in order.

(1). Considered as an adaptation for defence, and notwithstanding diversity of forms due to generic and specific divergence, the frontal weapons of ruminants appear to be fashioned upon one or other of two main types which may be defined from their structural relation to the skull as either *vertical and parallel* or *transverse and crescentic*. In the first-named type, which chiefly distinguishes the Antelopes, and attains a characteristic development in the genera *Strepsiceros*, *Oryx*, *Hippotragus*, the cranial weapons rise vertically from the skull, and whether lyrate, spirally twisted, straight, or recurved, are relatively parallel to one another and to the cranio-facial axis which falls between them. In the last-named type, which chiefly distinguishes the Deer and Oxen,

and attains a characteristic development in the genera *Bos* and *Cervus*, the cranial weapons diverge laterally from the skull, are set transversely to the cranio-facial axis, and usually assume a crescentic form, of which the terminal points may be directed upwards, as in most antlers and some horns, or inclined forwards, as in most horns and some antlers. The Sheep and Goats, which are of comparatively late appearance in geological time, exhibit a gradual and complete transition from one type to the other.*

That weapons of both types are an efficient means of defence against carnivorous attack, is a fact generally recognised, and sufficiently established by the constant experience of hunters; but the marked structural difference between the more specialised examples in either case, suggests a functional importance, and favours the conclusion that each type commands a relatively greater efficiency in dealing with a particular form of attack. Weapons that rise vertically and diverge but slightly from the line of the facial axis present a resisting force to a direct impact which seems peculiarly adapted to meet the attack of carnivores that creep on their prey by stealth and seize with a spring (*Felidæ*); while weapons that spread laterally and diverge widely, give a sweeping reach to the swing of the armed head which seems peculiarly adapted to meet the attacks of carnivores that hunt their prey in packs and kill by mobbing (*Canidæ*). It is therefore a significant fact that from Pliocene times the Antelopes have been associated mainly with a fauna of deserts and plains and with a predominant feline carnivora; while the Deer and Oxen for the same period have been associated mainly with a fauna of forests and hills and with a predominant canine carnivora. Illustration of this particular defensive use of either type may be found, on the one hand, in the lowered head of the kneeling Gemsbok, who thus awaits and averts the threatened attack of the Lion; and, on the other hand, in the familiar spectacle of the hunted stag at bay swinging his antlered head before a pack of hounds. That the complex branching of antlers is a further and formidable adjustment for a defensive purpose, will be questioned by no one who endeavours to come to terms with a wounded Deer so long as he can use his head;

* Transverse types occur among the Antelopes, and vertical types among the Deer and Oxen, but the general *facies* of the frontal weapons in both cases is the other way, as may be seen from any extensive series of either.

and even those phenomena of variation, whether in horns or antlers, which concern the varying organism rather than the modifying conditions, may lead us from our definitions of genera and species to reflect upon the pregnant remark of Weismann, that "the struggle for existence does not cease with the foundation of a new specific type, or with some perfect adaptation to the external or internal conditions of life, but it becomes, on the contrary, even more severe, so that the most minute differences of structure determine the issue between life and death."

(2). The passionate energy of sexual combat among polygamous and gregarious animals inclines the imagination to picture fatal results which are, nevertheless, without foundation in fact. Careful and repeated observation in the case of species endowed with combative instincts, and armed with formidable weapons, unquestionably attests the conclusion that injuries of any kind are rare, that fatal results are exceptional, that even the want of weapons is no barrier to mastership. Such a conclusion will not surprise when we review the structural types, which are a common character of cranial weapons, in relation to the method of sexual warfare, which is the common heritage of ruminants; and recall the difficulties that Darwin felt in attempting to explain the one as an adaptation to the purpose of the other. In a conflict which resolves itself into a butting and pushing match with forehead pressed to forehead, weapons interlocked with weapons, and the issue decided not by force of arms, but by wind, and weight, and persistent endurance, horns and antlers, whether set transversely to the facial axis or vertically extended in line with it, can play but an insignificant part or none at all. The rare occasions of death appear to indicate that the fatal thrust was dealt in pursuit as the beaten opponent turned his flank in flight.

Illustration of sexual warfare through all groups would be desirable, but does not occur in the recorded experience of hunters, and in the circumstances it could hardly be otherwise. The absence of evidence chiefly affects the Antelopes, in regard to which Mr. Selous,* in his nine years' 'Wanderings in Africa,'

* Should these lines meet the eye of Mr. Selous, the result of that distinguished hunter's experience on the subject would be greatly valued by the present writer.

notes nothing on the present subject save "a dead Situtunga ram that had been killed, apparently by a rival," and exhibited "a deep wound in the side, just behind the ribs." In other groups, however, sufficient examples are forthcoming to substantiate the previous statement, varying in extent of information, but valuable in the cumulative effect of their agreement.

Among the Oxen, the Buffaloes of India and Africa are distinguished by the calibre of their horns no less than by the ferocity of their disposition, and their sexual combats are proportionately determined. Sir Samuel Baker tells us that he "frequently witnessed such battles between old bulls," but makes no record of serious injury or death in the result. "In such trials of strength the vanquished party generally retreats at full speed, followed for a certain distance by its adversary, who endeavours to drive his horns into the posterior. This is a difficulty, as the great curvature of the horns renders a direct thrust impossible." On one occasion the fierce antagonists had interlocked their horns, and, ranging side by side in their efforts to pull clear, were killed by the enterprising sportsman with a single bullet.

In regard to Deer, the remarks of Caton upon the Wapiti confined in his park at Ottawa, Illinois, possess a special interest, because they have particular reference to a question put by Darwin concerning the utility of branched antlers as sexual weapons. After a brief description of the mode of joining battle, and of the care taken to secure accurate information, Caton concludes as follows:—"In none of the battles which have been witnessed in my grounds has either combatant sustained injury, so that I cannot explain the incidents of those which have been accompanied with fatal results (two cases previously mentioned), but probably some obstacle has intervened which prevented the escape of the vanquished, which has always been effected when the contests have been observed." The same writer was an eye-witness of a "terrific battle" between white-tailed bucks, which lasted for two hours without the animals being once separated," at the close of which, "I could not," he tells us, "detect a scratch upon either sufficient to scrape off the hair, and the only punishment suffered was fatigue, and a consciousness of defeat by the vanquished. Parallel with these statements, it is instructive to compare the protective use of antlers in defence, as illustrated by

a Wapiti stag in the same park, which, having killed one man and treed two others, subsequently held at bay for a considerable period a rescue party composed of three resolute men, each armed with a pitchfork and stimulated by the expectation of saving life.

No cervine species, however, has been made the subject of such full and satisfactory observation as the wild Red-deer among the bare hills of North Britain, where, as Sir Samuel Baker has remarked with truth, "the great numbers of Deer, and the facilities for acquiring a knowledge of their habits, offer a more than ordinary advantage, and yield information that would be difficult to obtain elsewhere." The comparative indifference of frontal weapons in sexual combat between individuals of a species is here forcibly illustrated by the fact that neither abnormality nor absence of cranial armature constitutes any apparent hindrance to success in battle. Stags with one antler recurved goat-like, or with both antlers abnormally fashioned in this way, or with a single, though normal, antler, or without antlers at all, are found to win and hold their harem against normally armed stags of similar size and weight, and to meet and conquer these, not on occasion only, but year by year on their own beat, till overcome in turn by a younger stag or killed with a bullet. Ears are split and eyes are sometimes put out, as shown by occasional one-eyed stags, and sometimes a point may reach the brain through the cavity of the orbit, or gore the flank of the beaten Deer as he turns to run; but, omitting the split ears, the above are exceptional cases, and it seems a probable estimate that, on an average of seasons, not more than one stag out of two hundred will meet his death by fighting.* The rarity of sanguinary hurts or fatal injuries has, in fact, been a subject of surprise to the careful observer since the days of the Stuarts half-a-century ago.

In regard to the sexual combats of Sheep, anyone who happens to witness a fight between black-faced Highland rams in the breeding season will satisfy himself that the ponderous

* This estimate refers to the fighting stags only, and was suggested (at my request) by a gentleman who has investigated in detail the amount and causes of natural death among wild Red-deer, and to whom I am also indebted for the preceding facts, all of which have come under his personal observation.

horns play no part in the transaction, the fight throughout partaking of that character which the battering-ram has rendered famous in the ancient history of nations. Even as a guard to the forehead the horns of the Highland Sheep avail him nothing in a bout with the hornless Leicester; nor do the admired weapons of the Highland Ox secure him from defeat by the polled skull of the more massive Galloway.

These and the foregoing facts point to but one conclusion—that frontal weapons, which were originally protective, have been structurally conditioned by natural selection during their development so as to become protective in the double sense of an adjustment, on the one hand, to preserve a species from destruction by external enemies in the struggle for life, and, on the other hand, to save it from self-destruction through sexual combat in the struggles of rivalry for possession. Had it been otherwise, the horned and antlered genera must have been suicidally exterminated in turning against each other the fatal weapons to which, under existing circumstances, they owe their ultimate survival.

The periodical shedding and renewal of antlers appears to conflict with the theory of their protective origin, and to favour the view which would associate them with the exercise of the sexual function; but the apparent difficulty is found to rest upon a narrow basis of facts, and disappears as we extend our horizon in space and time, geographically and historically. Frontal weapons, whether permanent or deciduous, and both in the male and the female, bear a more or less intimate relation to the reproductive system; but there is no reason to assume a special correlation between the shedding of antlers and the exercise of the sexual function, since observation and experiment have conclusively shown (1) that in the individual Deer this function is exercised independently of the presence or absence of antlers, and (2) that the shedding of antlers does not follow as a consequent upon the period of rutting, being subject to indefinite variation in different species. Palæontological investigation has taught us that the shedding of the velvet, and of the antler, are inherited characters conditioned by the structure of earlier and permanent weapons from which both horns and antlers were aboriginally developed; and the periods of shedding, among the Deer of Tertiary times, so far as they can be determined from

the facts at our disposal, were of quite indefinite recurrence, as with certain species in tropical India to-day. "Throughout the Tertiary period tropical conditions prevailed far into the temperate regions" (Wallace); and it is significant that, "with one exception, all the Pliocene Deer which can be brought into relation with living forms are closely allied" to existing Oriental species (Boyd Dawkins). Of Sambur and Axis we read in Mr. Blanford's authoritative work, 'The Fauna of British India,' that "stags with perfect antlers may be found at all seasons," and of the first-named Deer, which represents the most widely-distributed Oriental species, that "individual stags retain their horns for successive years." These facts have an important bearing upon the protective value of antlers to the Tertiary Deer, for they enable us to infer the constant presence of armed males in a herd.

Why the Deer of temperate regions carry their antlers for not more than eight or nine months, and the circumpolar species only for three or four, is a question which claims further investigation; but the ascertained facts lend great probability to Prof. Martin Duncan's view that the creeping in of a colder climate at the close of the Tertiary period, affecting the blood-supply so as to induce a failure of nutrition, caused antlers that were relatively permanent in the Pliocene tropics to become relatively deciduous during the glacial conditions that supervened.*

IV. SEX.

Weapons which owe their origin and purpose to protective adaptation must have been profitable to both sexes, and their

* The origin of deciduous weapons must be sought in the wider subject of physiological regeneration. Power to renew a lost part is present in various groups of animals, though in different degree, and is probably due to adaptation through selection, as suggested by Prof. Weismann, who points out, in support of his view, that the capacity for regeneration appears specially in parts which are of biological importance, and are at the same time exposed to frequent injury or loss. From the fact that primitive antlers were constitutionally brittle and liable to separation by fracture, while valuable as a means of defence, it seems legitimate to infer that some physiological stimulus, similar to that which provides the Lizard with a new tail, must have provided the Miocene Deer with new antlers. The burr, or coronet, of to-day marks the original point of fracture and subsequent seat of renewal, the skin-covered pedicel having survived (so to speak) *in statu quo*.

variable presence or absence in the females of genera and species whose males possess them, universally requires explanation from the standpoint of the previous argument. A solution of the problem will be found in the physiological antagonism between growth and reproduction, which seems to have been overlooked by the theory of sexual selection, but which nevertheless, in the higher mammalian organisation, lies at the root of all the more distinctively sexual characters. In the organic economy of the male the sum of vital force is expended on self-maintenance, and growth continues till expenditure nearly balances nutrition; in the organic economy of the female there is a reserve of vital force to meet the cost of reproduction, and growth is arrested "while there is yet a considerable margin of nutrition, for otherwise there could be no offspring" (Herbert Spencer). I think it probable that frontal weapons of a simple type and for the common purpose of defence were aboriginally developed without distinction of sex, though not necessarily by both sexes and not necessarily by either; but I think it certain that the development of such weapons must have been differently modified from the outset by the physiological organisation proper to either sex. In females the recurrent strain of parturition, suckling, and anxious maternity would tend to arrest the development of cranial structures necessitating for their effective maintenance a large expenditure of vital force; would tend, in the continuously severer struggles for life, to promote their loss by retrogression consequent upon the paramount claim and higher utility of rearing vigorous offspring; and would tend, in any case, to throw the burden of protection primarily upon the males, to the development of whose weapons, whether horns or antlers, physiology would offer no check and natural selection would afford a constant stimulus, the calibre of the weapon being directly conditioned by the struggle for life. Female horns and antlers therefore represent a compromise between conflicting forces, maternal and self-protective, whose variable incidence, according to the reaction of diverse constitutions upon diverse conditions of life, has produced a variable resultant, and added a new factor to the problem; so that the question, whether protective weapons are profitable to the female sex, becomes subordinate to the further inquiry, how far the development of such weapons may have been compatible with the complete fulfilment of the maternal functions?

The view that frontal weapons were aboriginally developed by both sexes in a majority of ancestral types finds support in the relative facts as presented by the natural history of existing ruminants. Modern zoology sanctions a division of surviving Pecora (true ruminants) into four groups of family rank,—the Deer, the Giraffes, the Pronghorns, and the Cattle,—of which the Giraffes are allied to the Deer, and the Pronghorns to the Cattle; and females with horns or antlers appear in every group, and in the older sections of the larger groups. To-day a single surviving species represents the Giraffes, which were nevertheless an abundant group in Pliocene times; as also the Pronghorns, which recall in the structure of their characteristic weapons a Miocene transitional and primitive type. Of Bovine genera with females bearing horns three-fourths are Antelopes, the oldest group in geological time; while *Rangifer*, the single Cervine genus with antlered females, is linked to the elder group of Deer not only by the telemetacarpal manus, but in the form of the vomer posteriorly prolonged by ossification. Interpreted phylogenetically, the embryological facts, adduced by Darwin to confirm his theory of “inheritance as limited by sex,” point in the same direction, and favour the belief that the possession of protective weapons by both sexes was a primitive character. Investigation of a number of cases showed that frontal weapons, when present in both sexes, were usually developed at an earlier age than when present in the males only; a crucial instance being afforded by the Reindeer, in which the antlers appear “at a most unusually early age, and at the same time in both sexes.” It must be remembered, however, that ancestral Pecora, representing Deer and Antelopes in the Lower Miocene, exhibit no trace of cranial weapons in either sex; and, in the gradual differentiation of genera and species, the tendency to reversion, which is potent even in males, would combine with the maternal function in females to modify their cranial weapons, whether towards inferior calibre, or retrogression, or disappearance, just as we find to occur in fact. For, associated with males which are normally horned or antlered, we have horned and hornless strains of females, not only among genera constituting families, as with *Cervidæ* and *Bovidæ*, but also among species constituting genera, as with the Sheep or the Gazelles, and even among individuals constituting species, as with the Situtunga Antelope (*Tragelaphus Spekii*), the females of

which are described as horned by Major Pinto on the upper Chobe, but were found to be hornless by Mr. Selous on the lower reaches of the same river. Among horned females, again, while a majority carry horns which, though well developed, are of generally lesser calibre than those carried by their males, we find, at the two extremes of a graduated series, that some have horns of equal calibre, as in the Hippotragine Antelopes, which show ancestral affinities with the oxen; and that others have horns which are rudimentary or disappearing, as in the Pronghorn, the females of which are usually horned, but occasionally hornless; or in the Blackbuck, the females of which are usually hornless, but occasionally horned.

The comparative proportion of horned and antlered females in their respective families is, however, by far the most striking fact relative to the physiological interference of the maternal function with the development of cranial weapons. Among surviving ruminants with antlers (*Cervidæ*) a single genus represented by a single species exhibits these weapons in both sexes; whereas among surviving ruminants with horns (*Bovidæ*) horned females appear in a majority of genera and in an overwhelming majority of species. Seeking an explanation of these different results in the history of frontal weapons, we find it in the fact that antlers arose from the intermittent fracture and renewal of antecedent structures which otherwise remained permanent as horns. There can be no question that the physiological cost of maintenance in the case of cranial outgrowths which were periodically lost and renewed, must have been immensely greater than in the case of outgrowths which were developed once for all, and permanently retained thereafter. Hence we may conclude that the reserve of vital force necessitated by the complete fulfilment of the maternal function, though generally compatible with the development of horns, was generally incompatible with the development of antlers. The occasional and abnormal presence in female Deer of simple antlers which retain their velvet (the primitive hairy skin), are not shed, and exhibit a rudimentary coronet (the point of primitive fracture) or none at all, appears to be a remarkable reversion to the Miocene ancestry in which similar weapons were aboriginal, permanent, and probably common to both sexes.

The absence of defensive weapons on the maternal side found

a certain compensation in greater speed and keener sense of danger, but the solidarity of herding life provided a more effective safeguard in the presence of armed males, who became the chief protection of the herd. The herding Bison was more than a match for the Wolf, and the herding Buffalo for the Tiger; the herding Antelopes could hold their own with the Lion, and will rescue a calf from the armed hunter; and among the herding Deer, when danger threatens, it is the master stags that take the lead. On the other hand, the undoubted maternal gain in the possession of defensive weapons, when present, is proved not only by their long-continued and extensive survival among female ruminants, but more particularly by their marked development in female oxen and in the females of certain Antelopes.

It may be noted, in conclusion, that frontal weapons, considered in respect of sex, present no difficulties to the theory of their protective origin. Their generally inferior calibre and partial absence on the female side admit of explanation as a case of established biological laws relative to growth and reproduction; while their generically superior calibre and normal presence in the males denote a physiological organisation capable of ampler individual expansion, and a protective instinct which put the fighting equipment constantly to the test of battle.

We may therefore conclude, generally, that the horns and antlers of ruminants are the result of a defensive adjustment in biological answer to carnivorous teeth and claws, and consequent upon the relation of destroyer and destroyed which obtained between carnivores and ungulates throughout Tertiary time. They disclose their protective origin and purpose in a structural adaptation which has secured, through natural selection, their relative harmlessness in sexual combat between the individuals of a species and their absolute efficiency against its external foes. Their variable presence or absence, and their variable calibre when present, in the females of genera and species whose males possess them universally, is due to the physiological demands of the maternal function, which were generally compatible with the development of horns, but generally incompatible with the development of antlers. Their historical appearance in the Miocene age of the Tertiary period is contemporaneous with a vast extinction of hornless ungulate families, and their subsequent development in an ascending scale corresponds with the gradual

thinning-out of unarmed ungulate genera and the gradually increasing destructive pressure upon those, whether armed or unarmed, that survived. Their evident loss of calibre since palæolithic times may be traced chiefly to the coming of man with missile weapons which, in altering the character of the destroying agency, discounted the value of cranial armature in the struggle for life.

ON THE BEAK OF THE SCOTER.

By J. H. GURNEY, F.L.S., F.Z.S.

IN the male Scoter, *Oidemia nigra* (Linn.), the black beak with a yellow patch forms a characteristic feature of the genus and a brilliant contrast of colour; but this patch is not always of the same size or extent, nor does it invariably occupy the same position on the upper mandible. This will be seen on reference to the accompanying sketches. Fig. 1 shows the normal appearance of an adult male Scoter, though sometimes the thin line of yellow, which passes over the basal protuberance, does not reach to the forehead. This is its usual appearance in winter, and a bird shot in Caithness in June (now preserved in the Natural History Museum) presents the same appearance, so that the drakes may be presumed to be alike at all times of the year in regard to the colour and shape of the bill. The beak of this bird is correctly delineated in Dresser's 'Birds of Europe,' but Yarrell, Gould, and Macgillivray have either figured it incorrectly, or from abnormal examples. Gould's two plates—in his 'Birds of Europe' and 'Birds of Great Britain'—are as different as possible from one another, and the colour is of too deep an orange for the normal living example. Neither of them, in fact, is satisfactory. My outline, fig. 1, is merely given for comparison with the three which follow, and is that of a drake in winter, in the phase familiar to wildfowl-shooters; but it will be seen how unlike it is to Gould's figure in the 'Birds of Great Britain.'

Figs. 2, 3, and 4 represent abnormal deviations in the distribution and extent of colour in the beak of the male Scoter, and are taken from the heads of three examples shot at Brighton. They have all been mounted by Mr. Pratt, of that place, who ten years ago drew my attention to these variations. No. 2 is still in

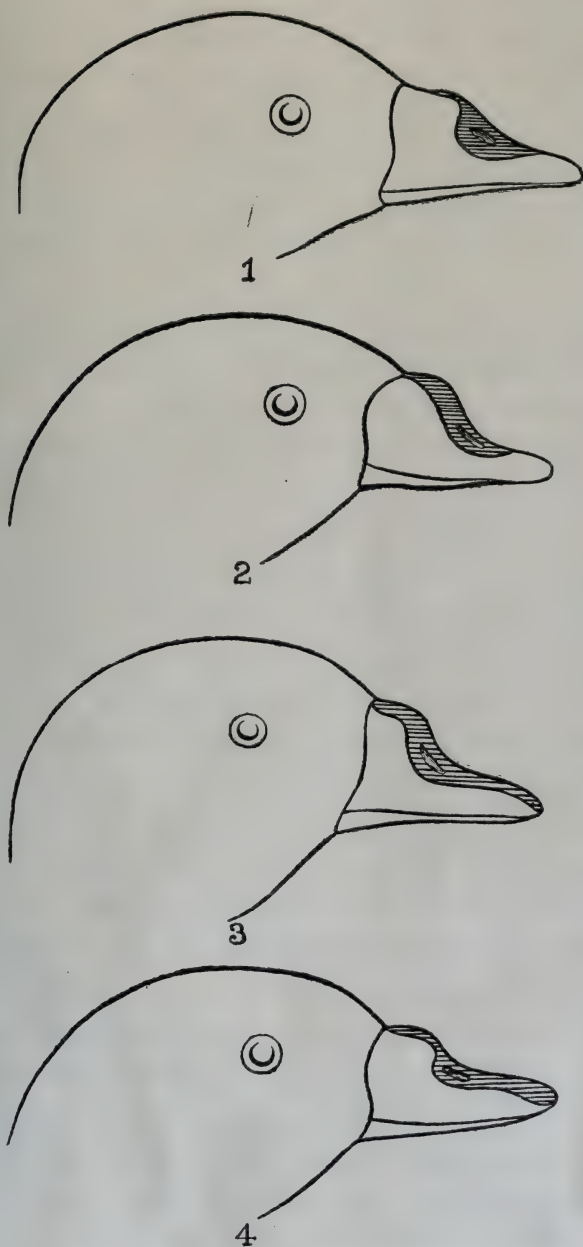


Fig. 1, from Caithness ; figs. 2, 3, 4, from Brighton.

his possession, while fig. 3 is in the Booth Museum, in the Dyke Road, and was shot, as I find from the late Mr. Booth's notebooks, to which I have been allowed access, on Jan. 10th, 1881. The yellow is continued to the extremity of the mandible in No. 3, and was so when the bird was shot, any colour afterwards put on being applied in correct imitation of the beak in life: its plumage is a little pied with white feathers on the fore-neck, and this may indicate that the bird was in a morbid state. I presume it to be the second of the five described by Mr. Booth in the third volume of his 'Rough Notes on British Birds,' though the date is not given. There is one in the Norwich Museum with a similarly coloured beak, and the bird figured by Yarrell, which has done duty in four editions of his work, as well as in Mr. Saunders' 'Manual,' is rather like it.

Fig. 4 was shot by Mr. Herbert Langton from the rocks between Brighton and Rottingdean, and is rather like Mr. Booth's, but the yellow extends into a broader band as it nears the nail or tip of the mandible. When first mounted the skin round and above the nostrils, as well as the dividing line on the basal knob, was observed by Mr. Langton to be reddish orange in colour, denoting a vigorous bird, I presume, but the plumage was entirely normal, as usual. Gould may possibly have had before him a Scoter resembling Mr. Langton's; but even then I cannot think it is quite correctly represented, although I am aware of the great pains taken by him in details.

The extent of the yellow colour on the beak of the male Scoter is of more importance than at first sight appears, because the American and North Pacific *O. americana* is only distinguishable from our bird by the amount of yellow on the upper mandible. (See the coloured figure of the head and outlines of beak in 'North American [Water] Birds,' vol. ii. p. 91.) I do not mean to suggest that they are not distinct species, though Mr. Seebohm does not accord it more than subspecific rank; but the way in which closely related forms will approximate is very remarkable (*cf.* 'Ibis,' 1893, p. 346).

Nowhere is this better exemplified than in the *Raptores*, and Ducks may follow suit. In *O. americana*, according to Mr. Trumbull, the yellow colour is not invariably co-extensive ('The Auk,' 1892, p. 154), which shows it is not a very reliable character, and he also points out how some previous authors have misdescribed it.

I do not view the three heads which I have drawn (figs. 2, 3, and 4) in the light of very old birds, but rather as birds of superabundant vigour which have thrown out an excess of yellow colour; as a cock Brambling will occasionally assume a black throat, or a cock Sparrow a chestnut breast, or a Rose Pastor a reddish head. Guillemots and Razorbills have been observed occasionally to have yellow beaks,* which, however, may arise from a deficiency of the normal colouring matter, albeit described as being bright yellow in freshly-killed specimens.

ORNITHOLOGICAL NOTES FROM MID-HANTS.

By SUTTON A. DAVIES.

AFTER I had sent in my notes for 1892 (Zool. Jan. 1893), a Barred Woodpecker, *Dendrocopus minor*, was shot at St. Cross in the last week of December; and in the same week a Great Grey Shrike, *Lanius excubitor*, was shot at Chilbolton, and sent to Mr. Chalkley's to be set up. I saw the bird, which showed the white bar on primaries only, and therefore was probably the *L. major* of Pallas.

JANUARY, 1893.

On the 9th, a male Tufted Duck, *Fuligula cristata*, was shot in an osier-spinney at St. Cross, and soon after another came into Mr. Chalkley's hands from Winnall. On the 12th, two Curlews, *Numenius arquata*, were shot at Alresford. The keeper at Fisher's Pond saw a Pochard, *Fuligula ferina*, on the 29th; he also informed me that he had observed two lots of wild geese, *Anser* sp.?, that winter, numbering seven and four respectively, a small flock of Golden Plover, *Charadrius pluvialis*, and a very large wisp of Snipe, from fifty to sixty birds in all. Teal had been scarce on the pond this winter, but Mallard fairly plentiful. One Woodcock only was killed. The Rev. P. H. Owen, of Colden Common, informed me that he had heard the metallic note of the Brambling, and had seen a small flock of Golden Plover passing over. Partridges were paired by the 31st, and at the end of the

* Cf. Krüper, 'Naumannia,' 1857, p. 437; Newton, P.Z.S. 1877, p. 2; and Pike, 'Zoologist,' 1877, p. 57.—ED.

month Mr. Chalkley received a Pied Woodpecker, *D. major*, from Abbot's Barton, Winchester, and a Barred Woodpecker, *D. minor*, from Ampfield, Romsey.

FEBRUARY.

A very wet month. On the 5th a male Common Buzzard, *Buteo vulgaris*, measuring 3 ft. 9½ in. across the wings, and weighing 1 lb. 15 oz., was shot at Easton, near Winchester; the stomach, which I examined, contained the remains of several mice, and nothing else. About the middle of the month the Pied Wagtails, *Motacilla lugubris*, which had left us almost entirely during December and January, began to make their appearance in small parties of six or seven. On the 19th I observed the first twig-bearing Rooks, and on this and the two following days we were visited by immense numbers of Peewits on migration. These birds would suddenly stream down into the water-meadows like a shower of leaves, and seemingly coming from nowhere, for no flocks were visible in the sky. All the while they kept up a low confused chattering like the chorus of roosting Starlings. The 25th was the first date upon which I noticed any signs of the coming brown hood in the "Black"-headed Gulls, *Larus ridibundus*. Grey Wagtails, *M. melanope*, were commoner with us in the winter of 1892-93 than I had ever known them before, and the same thing was noticed at Andover. Last winter, however (Dec. 1893), they were still more numerous.

MARCH.

With March began the phenomenally fine weather which lasted so long in 1893. On the 2nd a Rook's nest was begun in the Warden's Garden at Winchester College, a place where I have never known them nest before; it was followed by a second nest on the 4th, but I regret to say that the birds were shot at and prevented from building. A rookery of eight nests was established this year in "New Field" at Winchester College. On the 11th I saw what was almost certainly a Dipper, *Cinclus aquaticus*, on the river; as two have been shot in Hants within a year, it is not unlikely to have been one. On the 5th we found a Thrush's nest in course of completion, which contained three eggs on the 17th; and on the 16th Mr. R. C. K. Ensor found three nests of this species, each with four eggs. A Herring Gull,

Larus argentatus, visited us on the 5th, with the Black-headed Gulls, of which we calculated that over fifty per cent. had the brown head in some stage of development. On the 11th I put up three Common Snipe and one Jack; they usually leave us before this date. On the 12th Wheatears arrived on a bare warren some three miles from Winchester—a favourite breeding-place; out of half-a-dozen seen only one was a female. On this date I again observed a female Peewit shaping her nest with a curious upward motion of the breast, as last year (see Zool. Jan. 1893). On the 19th the Chiffchaff arrived, and was singing loudly at 2 p.m. The Rev. P. H. Owen reported its arrival at Colden Common on the 20th. I also saw on the 19th a cock Cirl Bunting, *Emberiza cirrus*, and a small flock of Golden Plover, on migration, near Compton. On the 20th a clutch of Rook's eggs was taken, and I was therefore prepared to find eggs on the 21st, when I inspected a large rookery. One clutch of five eggs was much incubated, but most nests contained from two to three eggs. On the same date we found two Coot's eggs. On the 22nd a pair of Tree Pipits arrived, and I watched the cock singing on the wing for some time; and, in the afternoon, a solitary Sand Martin, *Cotyle riparia*, was hawking up and down the water outside the school bathing-place at Winchester. On this date—an unusually late one with us—I saw the last "winter snipe." On the 23rd I found a Mistle-thrush's nest with three eggs; Mr. C. B. Cobb reported one Wood Pigeon's egg on the 25th; and on the 26th I found the first clutch of Peewits' eggs, considerably incubated. Mr. R. C. K. Ensor heard the Willow Wren at Fisher's Pond on the 28th, but this was a late date, as Mr. E. F. Atkins had observed it at Andover on the 19th. The Rev. P. H. Owen reported the Blackcap from Colden Common on the 29th, and Mr. W. J. Horn, writing to 'The Field,' reported Stone Curlews "in Hampshire" on the 31st. On the 24th Mr. Chalkley received a Pied Woodpecker from Micheldever, a bird included in the schedule of the Wild Birds Protection Act.

APRIL.

I was in Surrey till the 18th, but Mr. Atkins, of Andover, reported the following arrivals:—Cuckoo, 4th; Sedge Warbler, 10th; Swallow, 12th; House Martin, 16th. On the 18th I observed several Stone Curlews near Whitechurch; they were very

noisy. On this date the nesting of Wood Pigeons was general; we found several nests with very hard-set eggs. Mr. G. V. Clarke found young Tawny Owls in the New Forest. On the 19th two gulls were still with us, the main body having discontinued their visits. On the 20th Mr. Ensor found a young Wood Pigeon quite fledged, and Mr. Fisher two clutches of Dabchicks' eggs, one considerably incubated, and one of Moorhens' eggs almost hatching. On the 21st Mr. W. H. Turle wrote to say that he had already found eggs of the Stone Curlew in Hampshire. On the 23rd we found the first Wheatear's egg, and Mr. Fisher reported Fieldfares. A nest of the Water Rail, *Rallus aquaticus*, with seven eggs, was found in an osier-bed between Winchester and Twyford on this date. I had previously no record of its breeding nearer than Avington. By the 24th the following species had eggs:—Chaffinch, Greenfinch, Linnet, Wren, Blue Tit, Great Tit, and Pied Wagtail. Mr. Ensor found a clutch of five Reed Bunting's eggs, and heard the Corn Crake. The first Swift, *Cypselus apus*, arrived on this date. On the 25th we heard the Turtle Dove, and found Wheatears nesting in considerable numbers on a large stony warren five miles to the west of Winchester. Stone Curlews were seen in some numbers and were calling continually. On this day we found two nests of the Sky Lark, both with young birds. On the 27th Mr. Chalkley received another Pied Woodpecker from Alton, and a Hawfinch, *Coccothraustes vulgaris*, from Hursley. We found a clutch of Meadow Pipit's eggs, nearly hatching, and Mr. Clarke reported the first Sedge Warbler's eggs. On the 30th I observed some Stone Curlews on a warren to the east of Winchester; they seem to have been numerous this season throughout the county, and Mr. Turle (*in litt.* Dec. 13th) says, "seen in great numbers this autumn. Previous to the 30th Mr. Turle had found eggs of the Barn Owl and Bullfinch. The Long-eared Owls, *Asio otus*, again built this year in a wood not two miles from Winchester, and the nest, with two full-grown young ones and two smaller birds, was found on this date.

MAY.

On the 1st we found two nests of the Snipe, *Gallinago cœlestis*, near Stockbridge, one containing one egg and the other four eggs, very "hard-set." Linnets had young ones ready to fly, Peewits

young, and Yellowhammers eggs. Mr. Turle found three nests of the Long-eared Owl near Whitchurch, one with young almost ready to fly, one with six eggs, and one with five eggs. Mr. B. C. Cobb found young Barn Owls, two nests of the Great Tit, and one nest of five Jay's eggs, incubated, in the New Forest. Mr. G. V. Clarke found a clutch of Marsh Tit's eggs, much incubated. Eggs of the Creeper and Willow Wren were found at Basingstoke on this date by Mr. A. S. Bates. On May 2nd, Mr. Turle found three Snipe's nests, each with four eggs; and Mr. R. C. K. Ensor, a Whitethroat's nest, with five eggs. On the 3rd, I saw the first Spotted Flycatcher, *Muscicapa grisola*. On the 5th, Mr. Turle found eggs of the Sparrowhawk; and on the 7th, a Wood Lark's nest, with five eggs, in the New Forest. On the 6th, Mr. G. B. Cobb found young Yellowhammers; and a Nightingale's nest was found, in one of the few spots in the immediate neighbourhood where this bird builds, with three eggs. On the 9th, I found a very-loosely constructed Song Thrush's nest, with no lining of mud. Mr. Cobb had found a similar nest on the 8th; and a correspondent of 'The Standard,' writing from Alresford on April 3rd, remarked that the same was the case in that place, the extreme drought having prevented the birds from obtaining the necessary materials. On the 10th, I found young Coal Tits. Reed Warblers had begun to build on the 11th, and the first egg was reported on the 19th. Mr. Stares found Nightjar's eggs on the 15th. On the 11th, we found a nest containing six eggs of the Tree Pipit; and on the 13th, two eggs of the Turtle Dove were reported. On the 22nd, a nest containing young and eggs of the Long-eared Owl was found in a wood four miles to the west of Winchester, where, as I had long suspected, this species breeds. On the 11th, I saw a solitary "Black"-headed Gull playing with some rooks in the wind above Owslebury Down. On the 23rd, I observed the first Wood Wren, *Phylloscopus sibilatrix*, I have ever seen in this district, near Fisher's Pond; on this date I found eggs of the Swift and Flycatcher. On the 25th, Mr. John Stares, of Porchester, saw a Spoonbill, *Platalea leucorodia*, as recorded in 'The Zoologist,' 1893, p. 268. Mr. Ensor found a Cuckoo's egg in a Reed Warbler's nest on the 24th. The above detailed, and, I am afraid, somewhat tedious list of dates, I have copied out to show what a great difference a dry season like that of March, April, and May, 1893, makes to the times of nesting.

JUNE.

Sand Martins were unusually late in nesting with us in 1893, and it was not till the 1st that their nesting became general. Mr. Ensor observed a second Wood Wren at Hursley on the 15th. On the 26th, Mr. Stares found young Redshanks in the down in some marshes not far from Fareham. Turtle Doves nested with us in great numbers this month. On the 20th, I went down to Lyndhurst, and was greatly struck by the large number of Whinchats about.

JULY.

On the 6th, a solitary Herring Gull flew over Winchester College, at 6.45 p.m. The Hon. A. H. Baring informs me that no Tufted Duck's nest was found at Alresford this year, although the birds were occasionally seen about. This species, however, has bred this year in South Hants, for Mr. Stares saw a female and a young one in the neighbourhood of Fareham on August 7th; they are known as "Norwegian Ducks" in that locality. The Sheld Duck, *Tadorna cornuta*, nested in South Hants this year; Mr. Stares saw the birds about continually, and told me he thought they had nested. It afterwards transpired that a labouring man had tracked the old duck to her nest in the burrow and eaten the eggs! I forbear to mention the exact locality, as they may nest again there. Mr. E. F. Atkins saw a Pied Woodpecker near Charlton this month. He also informs me that a pair of Grey Wagtails, *Motacilla sulphurea*, frequented the neighbourhood all the summer, and during the summer of 1892. It would appear that they bred there.

AUGUST.

On the 1st, Mr. Stares saw two Greenshanks near Porchester. On the 10th, Mr. Chalkley received a Hen Harrier, *Circus cyaneus*, from Basingstoke. On the 15th, Mr. Stares saw some Pigmy Curlew, *Tringa subarquata*; and a Red-necked Grebe, *Podiceps griseigena*, was shot in Portsmouth Harbour about this date. The last Swift at Andover was seen by Mr. E. F. Atkins on the 10th.

SEPTEMBER.

On the 5th, Mr. E. F. Atkins saw the last Cuckoo at Andover. On the 6th, Mr. John Stares, of Porchester, saw an Osprey on

the shores of Portsmouth Harbour. On the 11th, a Herring Gull was shot at Crawley, and forwarded to Mr. Chalkley; and on the 13th, he received a Dipper, *Cinclus aquaticus*, which had been shot on Chilbolton Down. It will be remembered that a bird of this species was shot at St. Cross, Winchester, on Nov. 28th, 1892. On the 19th, I went down to Porchester, where I saw some Curlews, Redshanks, and numerous Dunlin and Ringed Plover. On the 20th, Mr. Stares saw four Greenshanks near Porchester. I returned to Winchester on the 20th, and found the place swarming with Pied Wagtails, mostly immature birds. Mr. Thomas Groome, of Stockbridge, writing to 'The Field,' says: "A couple of Quail were killed by Mr. T. Cannon and his party on Sept. 11th, in the parish of Nether Wallop, Hants. Not far from the spot where they were killed, I flushed another on Oct. 7th. Nearly every summer in this neighbourhood, when the corn is standing, I hear their call, but seldom find them in the shooting season." Mr. W. H. Turle informs me that twenty-three Quails were shot about Newton Stacey in September, "far more than we have ever had before." Mr. E. F. Atkins told me that they had no doubt bred this year near Andover, for he had frequently heard and seen them at a place some two miles from that town. Curiously enough, Mr. Stares had seen no Quails this year at Porchester, where, generally, some occur every autumn. Corncrakes were also scarce here this autumn, whereas forty-seven were shot at Newton Stacey in September (W. H. Turle, *in litt.*); and I was informed that a large number were shot about Abbot's Barton. The Hon. A. H. Baring informed me that a Quail's nest was found at Itchen Stoke, as in 1892. On the 29th, I went down to the New Forest, where I observed several Ring Ousels, *Turdus torquatus*, on migration; Mr. G. V. Clarke informed me that he had seen numbers of Whinchats, *Pratincola rubetra*, evidently on migration. The first appearance of the Gulls on their daily visits was on the 23rd.

OCTOBER.

On the 10th Mr. Stares saw a flock of Tree Sparrows, *Passer montanus*, on Titchfield Common. A good many Goldfinches about on the downs this month. Mr. Ensor, on the 18th, saw five Stone Curlews, *Ædicnemus scolopax*, on one of the warrens where they breed in the summer, some five miles from Winchester. On the

23rd Mr. Stares reported the first Hooded Crows, near Fareham. On the 28th I went down to the coast near Lee-on-the-Solent. Hoodies were numerous, and we saw a few Dunlins and Red-shanks, large numbers of Ducks, and one lot of seven Brent Geese. On this date Mr. Stares saw the first Fieldfare at Titchfield; and he informs me that a large migration of Goldcrests took place on the 30th, the gardens at Porchester swarming with them. In the second week of this month two Sandwich Terns, *Sterna cantiaea*, were shot in Langston Harbour, just on the borders; and in the beginning a Grey Phalarope, *Phalaropus fulicarius*, was shot near Winchester; special circumstances prevent me from giving details more precise. On the 31st I saw the first Fieldfares, at Winchester. Mr. Stares saw a Merlin near Porchester in the course of the month.

NOVEMBER.

On the 1st Mr. Ensor saw numbers of House Martins and Sand Martins near St. Cross. On this date I went down to Porchester, where I saw the first Jack Snipe of the year. Mr. G. B. Cobb and Mr. Stares saw a single Snow Bunting, *Plectrophanes nivalis*, but I was not with them at the time. Mr. Stares gave me a live Guillemot, a young bird of the year, which had been caught on a line by a man fishing in the Solent; I kept it for a day or two, and then gave it to the "Abbey Gardens," Winchester, whence it unfortunately disappeared a few days afterwards. On the 7th Mr. Ensor saw the first "winter Snipe." On the 9th Mr. Stares sent me a young male Scaup Duck, shot at Hill Head, on the Solent, on the 8th. On the 11th a Bittern was shot at Worthy, and sent for preservation to Mr. Chalkley, who had also received a Spotted Crake, *Porzana maruetta*, shot at St. Cross on the 1st. Mr. Stares saw a Great Crested Grebe in the Solent on the 8th (*in litt.* Nov. 11th). Goldfinches were unusually plentiful with us this winter, and Grey Wagtails more numerous than I have ever known them before. On the 21st we saw a female Teal on the Itchen; we very rarely see this species near Winchester. Mr. Stares tells me that he saw two Woodcocks near Fareham on the 10th; a flock of Brent Geese, five Shel-drakes, and a Great Northern Diver, in the Solent, on the 11th; and a Bittern, near Titchfield, on the 28th. The Hon. A. H. Baring informs me that a male Shoveller appeared on the lake at

Alresford Grange after one of the big gales in this month. Mr. E. Sillence, writing to the 'Hampshire Independent,' reported seeing a Swallow (*Hirundo* sp.?), flying round Romsey station on the 14th.

DECEMBER.

On the 2nd Mr. Stares sent me a Razorbill, immature, from Porchester. On the 12th I saw the eggs of a Great Tit, which nested in a hole of a wall at St. Cross, but deserted on this date, owing, I suppose, to the sharp frost of the night before. Mr. Turle (*in litt.* Dec. 14th) says, "There is a Harrier flying about our place (Newton Stacey), but I have asked for it not to be shot."

NOTES AND QUERIES.

MAMMALIA.

Mammals of Cheshire.—For some time I have been collecting evidence of the occurrence and distribution of the Cheshire Mammalia, with a view to the compilation of as complete a list as possible, and now write to ask for the assistance of any readers of 'The Zoologist' resident in the county. Information is particularly desired about the Polecat, Marten, Badger, Lesser Shrew, Black Rat, Harvest Mouse, Dormouse, all the Bats, and the Seals and Cetaceans of the Dee and Mersey estuaries. The presence in any district of the various Voles, Mice, and Shrews may often be detected by an examination of the embedded skulls in the pellets of the Barn Owl, and if anyone is sufficiently interested in the matter to forward a supply of these pellets, either to me, or to Mr. J. A. Coward, of Higher Downs, Bowdon, who is co-operating with me, the help will be promptly and gratefully acknowledged. During the next few months many opportunities of obtaining Bats will doubtless occur, and we shall be glad to identify and, if desired, return any specimens which may be forwarded to us.—CHAS. OLDHAM (Brookside, Sale, Cheshire).

Polecat in Cambridgeshire.—Mr. Griffin, birdstuffer, at Cambridge, has a very nice female Polecat, *Mustela putorius*, which he tells me was killed at Swavesey, in the summer of 1892.—G. E. H. BARRETT-HAMILTON.

Bank Vole in Warwickshire and Worcestershire.—Until I read Mr. Elliott's note (p. 223), I had overlooked the fact that this species had not previously been recorded for Worcestershire. In May last I was at a bank situated so close to the boundary line between Warwickshire and Wor-

cestershire that, for natural history purposes, it might be claimed by either county. Bank Voles were numerous, and I watched their movements for some time. I killed one, and found that it was feeding upon the tender young leaves of the hawthorn. It would dart out, seize a leaf, and retire to devour it. I know several places in Worcestershire where this little animal is common, and I have one now in my possession, which, after a severe thunder-storm, was washed into the middle of King's Road, King's Heath.—F. COBURN (Holloway Head, Birmingham).

BIRDS.

Reported Nesting of Marsh Harrier near Oxford.—With reference to the notes on this subject which have already appeared (pp. 227, 268), we are in a position to state that having made further enquiry of Mr. Swann and Mr. Buttress, we are satisfied that some mistake has been made, and that there is no evidence to support the statement that the Marsh Harrier nested in Oxfordshire in July, 1890.—ED.

Nesting of the Grey Wagtail.—During the last week of March last, when staying at Nettlecombe, a village a few miles from Williton, I saw a pair of Grey Wagtails (*Motacilla sulphurea*) running about the drive and lawn in front of the rectory, and perching on the trees and roof of the house, apparently looking out for a nesting site. On mentioning the fact to my host, he informed me that a pair (of what he called Yellow Wagtails) nested every year in the ivy or creepers on the house. The rectory is some 200 or 300 yards away from any water. I saw the pair every day while I was there, and they remained the greater part of the day about the house. I was surprised at this, for I have seldom seen them far from water for any length of time, and on referring to Seebohm's 'British Birds' (vol. ii. p. 204) I found no mention of them in such a situation.—H. ST. B. GOLDSMITH (Bridgewater).

Nesting of the Lesser Redpoll and Hawfinch in Somerset.—Since writing to you about the Lesser Redpoll (p. 265), I have heard of several instances of its nesting in Somerset, and of some two or three nests being taken this year in the county. The Hawfinch (*Coccothraustes vulgaris*) has also nested in considerable numbers in the north-eastern parts of the county this summer.—H. ST. B. GOLDSMITH (Bridgewater).

Nesting of the Marsh Warbler near Bath.—In June, 1892, I first made the acquaintance of the Marsh Warbler (*Acrocephalus palustris*) in Oxfordshire, where I was shown it by Mr. Warde Fowler; and in July, 1893, in company with Mr. Fowler, I both saw and heard several of these birds in Switzerland, and found one nest (*cf.* Zool. 1893, p. 308). This year I have found a pair of Marsh Warblers and their nest near Bath. The nest which was found on June 19th in an osier-bed contained two

typical eggs, and was suspended from stalks of meadow-sweet, and one osier-stem. It was about 18 in. from the ground, and I have especially noticed in this case, what has already been pointed out by Mr. Fowler, that the stems passed outside the nest and through the rim only, whereas in nests of the Reed Warbler the stems which support them are usually worked into the sides of the nest from near the bottom to the top. There was a little horsehair lining, and some pieces of wool were worked into the foundation outside. The hen bird began to sit on four eggs on June 22nd; I took one egg, and the remaining three were hatched on July 5th. The cock bird was a splendid mimic, and it was most amusing on two occasions when I took two friends, who know the Reed and Sedge Warblers well, to listen to him. Among others he imitated especially well the Thrush, Sky Lark, Great Tit, Whitethroat (both its song and alarm note), Swallow, Willow Wren (song and alarm note), and Whinchat. On the same day on which I found this nest I also found nests of the Reed and Sedge Warblers near the same spot, and so had a good opportunity of comparing both birds and nests of the three species.—H. C. PLAYNE (Clifton College).

Sand Martins nesting in a Ruin.—During the last week of June, while visiting Garrison Island, on Lough Cullen, Co. Mayo, I was surprised to see a number of Sand Martins flying about the castle walls, and passing in and out of the crevices between the stones where the mortar had fallen out. On landing to examine the place I saw traces of nests in the crevices, and with a stick pulled out part of one; but the fissures were so deep, and the mortar so hard from age, that it was impossible to get at either eggs or young birds. The ruins are those of a circular-shaped castle, or tower, probably the former, for the diameter of the circle enclosed by the walls is eighteen or twenty yards; the portions of the walls standing are about twelve or fifteen feet in height, almost level with the inside, which is filled up with fallen stones and rubbish, overgrown with grass and nettles. At the base of the walls outside, in a thicket of tall nettles, a Red-breasted Merganser (*Mergus serrator*) was sitting on ten eggs; and inside, in some long grass and nettles, was another nest of this species with a similar number of eggs, on which the duck was sitting so close that she was almost taken with the hand before leaving the nest. On the broad, flat, grassy top of the walls three pairs of Common Terns had eggs, and four or five pairs of Black-headed Gulls; while in the centre, on the grassy rubbish were the nests and eggs (one with young just hatched) of five or six pairs of Terns. At the bushy end of the island two pairs of Sandpipers (*Totanus hypoleucus*) were noisily flitting about, evidently showing by their anxiety that they had eggs or newly-hatched young close by. — ROBERT WARREN (Moyview, Ballina).

Lesser Redpoll breeding in Somersetshire.—It may be worth mentioning that there are a good many of these birds this year on Clifton

Downs, only separated from Somersetshire by the river, and nests have been found. I have seen the birds on the Somersetshire side of the river, but have not seen a nest, though I have no doubt they breed there also.—HERBERT C. PLAYNE (Clifton College).

Redstart breeding in Co. Tyrone.—On June 16th I visited Baron's Court Demesne, Co. Tyrone, which abounds in old timber. On enquiring of Mr. James Maclean what birds bred there, he showed me a pair of Redstarts which he said had bred three years in succession since he came to the place. They had their nest in a hole in a birch tree. It contained four young, ready to fly, and some eggs that had not hatched out. Having seen Redstarts in Norfolk last May, I had no difficulty in identifying them. On the 26th and 29th May, 1888, the Rev. G. W. Peacocke saw and heard a male Redstart singing in Rash Wood, also in Co. Tyrone, not very far from Baron's Court. Hitherto the Redstart has been recorded to breed in Ireland only at Powerscourt, Co. Wicklow, since 1885. Elsewhere in Ireland it has only been known as a very rare visitor, and supposed to be much rarer than the Black Redstart, which probably visits our coasts every winter.—R. J. USSHER (Cappagh, Co. Waterford).

Cuckoo calling on the Wing.—I have on several occasions heard the Cuckoo calling on the wing, but always (I think) when pursuing another Cuckoo, presumably the female. On May 22nd, 1893, at Winchelsea, I watched one Cuckoo chasing another for about an hour, and had a particularly good opportunity of listening to the birds; for, after flying round the neighbouring fields, they frequently settled on the tree under which I was basking. The bubbling note of the female and the call of the male were kept up almost continually both when the birds were on the wing and when settled. I did not hear the female utter the syllables *Cuc-koo*, though I am by no means certain that she does not sometimes do so.—A. HOLTE MACPHERSON (51, Gloucester Terrace, Hyde Park).

In the last number of the 'Zoologist' I note the enquiry (p. 264) whether it is a common occurrence for Cuckoos to call while on the wing. This same question has already been asked me this year, so I have kept an especial look-out, and in May watched a Cuckoo fly for some distance over the Avon, calling all the time. This is the only instance which I have noticed personally, but a friend of mine also observed a Cuckoo calling while on the wing, near the same place, on another day.—HERBERT C. PLAYNE (Clifton College).

I have a note that on May 14th, 1893, I saw a Cuckoo, which was uttering its cry as it flew past me. There was a pair of them flying together, slowly, but one only was calling. I have a distinct recollection of the circumstance, but although this is the only case I have noted I am sure I have heard the Cuckoo calling on the wing on several occasions of

which I have kept no record. My observations were made in the south of the stewartry of Kirkcudbright. The Cuckoo arrived there in 1893, on April 23rd, about the normal time, or perhaps a day or two earlier than usual.—J. W. PAYNE (Edinburgh).

Referring to the enquiry on this subject (p. 264), I do not think it can be a common occurrence for a Cuckoo to call while on the wing. Living on a Highland hill-side, which happens to be a favoured haunt of Cuckoos. I have had considerable opportunities for observing their habits at pretty close quarters, and in my experience Cuckoos invariably call when perching, the act of calling being accompanied with considerable dilatation of the throat, and an apparent muscular effort, which seems to make the perch a desirable *point d'appui*. Calling Cuckoos constantly fly for a short distance, and will re-commence calling the instant after alighting, but never, to my knowledge, during flight; although they will sometimes, when apparently disturbed, fly off, uttering a low and rapid "kok-kok-kok-kok," quite distinct from the "water-bubbling" note, which I have also heard, and which Mr. Howard Saunders ('Manual,' 278) ascribes to the female.—ALLAN GORDON CAMERON (Ledaig, N.B.).

My own observations lead me to think that it is most decidedly an unusual occurrence; but that Cuckoos do call at times when flying I had positive ocular proof last year in the Broad District of Norfolk. The swampy grounds surrounding many of the broads seem to be a perfect paradise for Cuckoos, judging by the number that congregate there, and dozens of them could be seen and heard in an hour's tramp over the marsh. On May 2nd, 1893, I was out a little after daylight, and saw as usual great numbers of Cuckoos perched on the stunted alders scattered all over these wet marshes, most of them calling vociferously, each apparently trying to outcall the other. And one of these birds was so engaged in its vocal exercise that it allowed me to get within a few yards of it. When at last it saw me, it slipped hurriedly off the bough on which it was sitting and flew off towards the "broad," emitting at least one perfect call as it went, and while still quite close to me. This is the only instance which I can personally adduce of a Cuckoo calling on the wing.—F. MENTEITH OGILVIE (Sizewell House, Leiston, Suffolk).

According to my experience, it is a common occurrence for the Cuckoo to call while on the wing. The following are extracts from my note-book of this year:—April 21st. Saw two Cuckoos mating this morning. The usual performance: she flying away, he persistently following her, and crying "cuckoo" continually in deep and beautiful tones. My sudden appearance caused him to swerve away; she stopped in her flight, alighted on a tree, and looked for his coming. When he approached with his mellow "cuckoo," she launched into the air and again lured him on. May 11th. *Cuculus canorus* flew across my garden this morning, calling

loudly as he flew. May 18th. Two Cuckoos flying across King's Road, the female first, the male following, calling "cuckoo." May 21st. Saw the two Cuckoos again this morning, and have now seen them many times. The female always goes first, silent; the male follows in her wake, crying "cuckoo." They are high in the air when they pass over.—F. COBURN (Holloway Head, Birmingham).

I have heard the Cuckoo calling while on the wing, but so far as my observation goes, I should say that such a thing is unusual.—WILLIAM W. FLEMING (Coolfin, Portlaw, Co. Waterford).

[We have received several other communications on this subject, for which unfortunately we are unable to find room this month.—ED.]

Cormorant choked by a Flounder.—Seeing the account of a Great Northern Diver having been choked by Grey Gurnard (p. 265), brings to my recollection an instance of a Cormorant having been choked by a Flounder. I was returning from Bartragh in my gunning punt, when I saw a Cormorant lying flat on the water, with outspread wings, and this unusual position attracting my attention, I rowed towards the bird and picked it up, when I found a Flounder 8 in. in length partly swallowed, and firmly embedded in its throat. The Cormorant had swallowed the head and body of the fish as far as the anal fin, and the little sharp spine in front of it got stuck firmly inside the throat. As the unfortunate bird could neither swallow nor disgorge the fish, it was probably drowned when unable through weakness and exhaustion to keep its head above water.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

A Visit to Puffin Island, Co. Kerry.—On June 5th I visited this island, near Portmagee, Co. Kerry. A notice of the ornithology of the island may be found in an article by my friend Mr. Ussher (Zool. 1884, p. 481). The Rev. A. Delap, Rector of Valentia, who was one of our party, found a piece of composite candle on the west side of the island, where a good many pairs of Herring and Lesser Black-backed Gulls were congregated breeding, and where we saw a pair of Greater Black-backs. This piece of candle I have sent to the Editor. It was no doubt swallowed by one of the species of Gulls which were seen around the spot, and what could not be digested was cast up in the form found. Mr. Delap told me that he often found pieces of candle on the coast at Temple Crove, Co. Donegal, where he was parish clergyman before he came to Valentia. These pieces, he says, were evidently thrown out by stewards on passing steamers, and, when cast up on shore, were eaten by Gulls! This fact may be worth recording, if only to show the greediness of these birds, and how nothing comes amiss to them. I was anxious to inspect the colonies of Terns mentioned by Mr. Ussher, but not a single bird was to be seen. They had not arrived for breeding. Nor was I able to get eggs of either Shearwater or Storm Petrel, although

the boatmen who accompanied us got several eggs of Puffins. We landed on the rocky islet near Puffin Island in hopes of finding a nest of the Great Black-back. No eggs, however, were to be found. We got two eggs, in separate nests, of Herring, or Lesser Black-backed Gulls; which species it was impossible to say, as we did not see the birds on their nests. The weather, I am sorry to say, was too unpropitious to allow a visit to be paid to the Skelligs.—WILLIAM W. FLEMYNG (Coolfin, Portlaw, Co. Waterford).

[The piece of candle forwarded by our correspondent is of the size, shape, and general appearance of a "blanched almond."—ED.]

Eggs of the Tree Sparrow.—I can quite confirm Mr. Aplin's remarks (p. 228) concerning the eggs of this bird. I have met with this locally-breeding species somewhat commonly in three different vicinities, namely, the sea-shore, in a spot near Ramsgate, where it breeds indiscriminately in holes of trees or crevices and holes in the sandstone cliff; near Ilford, in Essex; and in the neighbourhood of Harrow, Middlesex, where it is, I believe, as common as in any other locality in the British Islands. In this latter district I have observed its habits for the past six or seven years, and during that period I have seen a very large number of nests, once as many as *three* in a single old oak tree. I take the perfect clutch of eggs to be five in number, and out of all the sets I have seen I never saw one of that number which had not one "light" egg, with but few and pale markings. Certainly some sets of four have had all the eggs dark, but even in a few sets of that number I have had a light egg. One peculiarity in this species is its habit of using the same nesting-hole year after year, in spite of molestation. I know of one such hole in the vicinity of Harrow which is used each season, first by a pair of Starlings, and later by the Tree Sparrows, which will persist in their attempts to rear a brood in it, although, from its exposed position, the nest has been robbed perhaps twice or thrice in a season.—HENRY K. SWANN (Forest Grove, Colville Street, Nottingham).

Curious proximity of Nests.—We have in the garden plantation here two nests in such close proximity that I think it worth recording in 'The Zoologist.' They are those of a Wren and a Tree Creeper, and are built in an old stump which is hollow and split. The Wren's nest is at the top, and only six inches from that of the Creeper. In the deer-shed in the paddock here I have also a Thrush's nest with young, and a Wren's nest at the side of it, the one actually touching the other.—J. WHITAKER (Rainworth, Notts).

Ornithological Notes from France.—During the spring of this year I spent twelve days with a friend in France, with the intention of seeing what I could of birds, and especially anything connected with their migration, and with the help of bicycles we travelled over a good deal of country.

Starting from St. Malo, on April 14th, we passed through Dinan and Vannes, and reached Nantes on April 16th. Though the country abounded with birds, especially Whitethroats, Yellow Buntings, Cirl Buntings, Tree Pipits, Redstarts, and Magpies, we saw nothing of particular interest till we were near Vannes. Here we first came upon a colony of Sedge Warblers singing in some thick bushes, and amongst the gorse on some moorland a few miles further we heard Grasshopper Warblers, while in the same neighbourhood we saw Hen Harriers. We were just five miles from Nantes when suddenly several Nightingales in a thick hedgerow burst forth into song. From this point we seemed to be always close to a Nightingale, and they were so numerous that I cannot help believing that we had suddenly met the "rush" of Nightingales migrating northwards; the hedges and thickets resounded with their songs. The same evening it was pleasant to see Swifts careering through the air over Nantes, and to hear their screaming some days earlier than usual. We reached Les Sables d'Olonne, our next stopping place, after a stormy day's ride, on April 17th, and early on the following morning I walked out on the sand-hills by the sea, and saw parties of Swifts flying steadily northwards. From Les Sables our day's journey was to Luçon, and on the way, at Avrillé, in some trees by the roadside, I found a small colony of Bonelli's Warblers. How glad I was to meet again this delightful little bird, and to be reminded of the slopes of the Alps, where I first made its acquaintance last summer. On this day also I met with the Crested Lark, and afterwards found it fairly abundant in many places. The first part of the road from Luçon to La Rochelle passes over a large tract of flat country intersected by many ditches, where there are few bushes and trees, except by the roadside. Here there were numbers of Stonechats, Yellow Wagtails, Corn Buntings, Sedge Warblers, and a few Whinchats and Wheatears. In the trees by the side of the road were many Magpies' nests, some of them destitute of any roof. The Magpies are so numerous, and apparently unmolested, that they seem to have grown careless in building their nests. They were to be seen sitting on their eggs in most exposed situations quite near the ground. Near La Rochelle Wrynecks were most extraordinarily abundant, and were often seen as well as heard on the trees by the road. One pair sat side by side on a gate-post, calling in unison, and did not seem to mind my presence in the least. From the midst of a thick osier-bed I had splendid views of three Hen Harriers, two males and one female, which kept flying close to my head, and the latter once perched on an osier-stump only a few yards from me. In the evening of April 19th we reached Rochefort, and next day rode on through some beautiful country to Blaye, on the bank of the Gironde. On the way Hoopoes soon attracted my attention, and it was delightful to watch them bowing as they uttered their well-known "hoop-hoop, hoop-hoop." On the same day (April 20th), near Pons, I first saw a

Woodchat Shrike; nearer Bordeaux I saw two more, one of them singing from the top of a vine-pole. In a reed-bed not far from Blaye were two Great Reed Warblers, singing so loudly that I heard them some distance away; they were not at all shy, and one perched in full view on a reed close to me, as though pleased to have a listener. At Bordeaux we only made a short stay, and I was unable to find any new birds; Nightingales were very plentiful, but Chiffchaffs and Willow Wrens were not so numerous as they were further north. In the evening of April 21st, while riding along the bank of the Garonne, I noticed a very large number of Swallows flying steadily down stream quite close to the water; there was a continuous flight of them till it became too dark to see. Could they have been migrants that had crossed the Cevennes, or were they only making for some favourite roosting-place down the river? We travelled by train to Saumur, and rode back to St. Malo through Rennes. On the sand-banks in the Loire I saw Waders, which I believe were Dunlin, and near Angers heard the only Landrail we met with. On our return we found Nightingales plentiful near St. Malo, though none were there when we started. What especially surprised me was that I could find no Wood Wrens in any part of France we visited, though I searched for them in many suitable spots; there were plenty to be found as soon as we had crossed again to Southampton. Nor did I see any Flycatcher or Red-backed Shrike; I suppose it was too early for their arrival, even so far south as Bordeaux. In all I made a list of seventy-three species, which I was able to identify, and it might perhaps have been increased if a good deal of valuable time had not been wasted in taking shelter from the heavy storms which we encountered almost every day.—H. C. PLAYNE (Clifton College).

Nesting of the Bittern in Hants.—The Rev. A. A. Headley has lately shown me an egg which is undoubtedly that of a Bittern, *Botaurus stellaris*. He obtained it of a working man in Alresford, who stated that it was taken in Avington Park, some six or seven years ago, and that the nest was built in the stump of a withy, and made "like a Jack Hern's." If the record can be considered indisputable, it is a remarkable one. The Rector of Alresford will, I have no doubt, be glad to submit the egg for inspection, though it is, unfortunately, in a bad state of preservation.—SUTTON A. DAVIES (Winchester College).

CHELONIANS.

Emys lutaria turned out in Suffolk.—In May, 1889, we placed eleven Tortoises of this species in a pond situated in a plantation in this parish (Leiston), where for a time they thrived, and seemed likely to remain. But before long they began to wander in various directions. The pond is stocked with tadpoles, various aquatic insects and their larvæ, but is much shaded by trees; and possibly this lack of sunshine may have been the

cause of their leaving the place in search of some more congenial abode. In the beginning of June in that year a Tortoise with a marked carapace was twice found some distance away in a road, and in each case replaced in the pond. On Nov. 25th, 1890, one was picked up in the village by a boy and brought to me. It was apparently in good plight, and felt very heavy, notwithstanding it had passed the winter at large. Another was found in the summer of 1891, and I was told that during that of 1893 a boy picked one up, but I did not see it. On Feb. 10th of the present year (1894) some men ditching in the meadows, rather less than a quarter-of-a-mile from the pond, threw out with the mud two Tortoises. They placed one of them on the meadow, at some distance from the ditch, and went on with their work, but it soon made its way back to the water, and I afterwards saw its tracks across the wet mud. They said that they had also found one on the "wall delf," at a spot several hundred yards further from the pond, when at work there shortly before Christmas; and that, about three years before, they threw one out of a ditch which is over a quarter-of-a-mile from their old quarters, and in the opposite direction. On April 8th last a boy brought to the house a fine healthy specimen, which he had found basking on a piece of wood by the river Alde, about half-a-mile off. It felt heavy, and had a very perfect and handsome shell, the markings being particularly bright, clear and distinct, as if surrounding conditions had been favourable to its well being. Yet another was brought to me on April 16th, which had been taken from a ditch near Iken Cliff, between two and three miles from the pond from which it had wandered. Since these specimens were placed in the pond in May, 1889, no others have been turned out here, and it is very unlikely that anyone else in the neighbourhood can have liberated any; therefore four at least out of the original eleven must have survived five English winters. On fine bright days, while in the pond, several of these Water-tortoises would often clamber upon a floating log in the sunniest part of the water, and there remain basking in the warm rays; but so alert and quick were they to perceive any threatening danger, that if anyone approached at all near to them, however noiselessly, they would drop off one by one into the water like stones. Those in the ditches are fond of lying, in hot weather, upon the "scum" on the surface of the water, with the head raised high in the air, so as to get as good a view as possible of their surroundings, in order, perhaps, to guard against a surprise. Sometimes the brightly-spotted head and wide-awake-looking eye is all that can be seen above the surface. Up to the present time I have not seen or heard of any young Tortoises, and should be very glad to know of any instance of the breeding of *Emys lutaria* in this country. Since writing the above we have turned out a few more.—G. T. ROPE (Blaxhall, Suffolk).

REPTILIA.

The Poison of Australian Snakes.—Amidst all that has been written about the poison of Australian snakes, very little indeed—in fact, only a few stray remarks here and there—is concerned with its chemistry. As Messrs. Martin and Smith, who are engaged in a systematic investigation of the subject in Sydney, say, a complete investigation into the subject of snake-poison must answer three questions:—1. What is the poison? 2. What is its exact physiological action? 3. How can we best prevent or counteract its action? The great majority of workers have tried to answer the third question first, and whilst it is of course possible, though it has not been done yet, that one might by accident stumble across an “antidote” to snake poison, still it stands to reason that the rational way to begin is to try and answer the first two questions, and having got our answers to these, we may then perhaps hope to scientifically deal with and answer the third. There is the initial difficulty in the Australian snakes, of obtaining a large quantity of poison, because a Black Snake, for example, only puts out at one time perhaps a tenth as much as a fair-sized Cobra or a Rattlesnake does. What it does put out is, however, sufficiently virulent in nature, for, after drying the venom, it is found that the injection of 1–1000th grain is sufficient to kill a rabbit weighing five pounds in a hundred seconds. Messrs. Martin and Smith point out that the amount of solid matter obtained by drying the liquid venom varies considerably under different circumstances, such as previous discharge of poison, feeding, time of year, &c.; and as the venomous property depends on this solid matter, the virulence of equal quantities of wet snake-poison varies considerably. In other words, it is quite possible that the bite of the same snake might at one time contain enough poison to be fatal and at another time be much less potent, even though the actual amount of fluid injected on each occasion might be the same. They naturally point out that this is an important element to be taken into account in all experiments when the fluid is injected into an animal to ascertain its effects, and that its not being taken into account unfortunately vitiates all the experiments of the committee appointed by the Medical Society of Victoria in 1875–6. Following the experiments of previous workers, it was easily found that, by adding alcohol to the venom, the latter could be divided into two parts, a whitish flocculent substance which is thrown down, and a fluid. The next step in the enquiry is a very evident one, namely, to find out if one or both of these elements contains the poisonous matter. Supposing now that we take three different substances—1, snake-poison as put out from the snake's fang; 2, the white flocculent matter which is thrown down when absolute alcohol is added to the poison; 3, the fluid which remains after the absolute alcohol has been added, and test their

action on some animal, say rabbits. We find always that the first and second produce identical results—those of snake-poisoning, while the third is always harmless. It follows that the fluid venom contains some material which can be extracted by the use of absolute alcohol, and to which the venom owes its virulent power. The next question which naturally arises is, what is the nature of this material? A series of chemical experiments showed that it belongs to the class of substances formed of a combination of carbon, oxygen, hydrogen, nitrogen, and sulphur, to which chemists have given the name of proteids, and of which a very good example is albumin, or white of egg. That the poisonous effect is due only to the presence of these albuminous substances is proved by the fact that everything, such as absolute alcohol, which removes the former from the venom, renders what is left behind perfectly harmless. If, also, we subject the venom to conditions—such, for example, as long boiling—which are known to alter and decompose proteids, then the virulent is changed into a harmless fluid. There are a considerable number of these proteids or albuminous substances, and by careful investigation Messrs. Martin and Smith discovered that the poisonous element is associated with special forms known as albumoses. These albumoses are substances made by the addition of the elements contained in water to albumins, and are produced, for example, by the action of gastric juice on an albumin, such as white of egg, taken in as food, or in some not yet understood way by the action on albumin of the cells which constitute different organs of the body. They are of great importance in the case of various diseases, such as diphtheria. The diphtheria bacillus, or germ, produces in the body a ferment which, when it comes in contact with proteids taken in as food, forms out of them certain of these albumoses, and it is the action of these which gives rise to the abnormal conditions which we recognise as the disease diphtheria. So again, in a slightly different way, the anthrax germ forms albumoses; and it is most suggestive to find an identity of structure in the poisonous elements present in the case of diphtheria, anthrax, and other diseases, and in snake-venom. In the poisonous snakes there is present a special poison-gland on each side of the head, which consists of a mass of cells, by which the venom is manufactured. The blood carries albuminous material to the gland; and here, Messrs. Martin and Smith suggest, the cells of the gland exert some special direct influence on it, and so transform it into the poisonous albumoses which, when the snake bites, pass down a little tube to the poison-fang, and so into the animal bitten.

SCIENTIFIC SOCIETIES.

ZOOLOGICAL SOCIETY OF LONDON.

June 19th, 1894.—Dr. A. GUNTHER, F.R.S., V.-P., in the chair.

Mr. Slater exhibited the skin of a Monkey of the genus *Cercopithecus*, and pointed out that it belonged to the local form referred to in his recent paper on the *Cercopithecini* as *Cercopithecus diana ignitus*. He also exhibited the type specimen of *Cercopithecus grayi*, Fraser, which was formerly in the Knowsley collection, and which, in his opinion, was identical with *C. erxlebeni*, Pucheran.

Mr. H. Scherren exhibited a bottle in which an amphipodous crustacean (*Amphithoe littorina*) had built a nest with runs of sand and pieces of weed.

Prof. Ray Lankester read a paper on the external characters which distinguish the two Dipnoid fishes, *Lepidosiren* and *Protopterus*, and expressed the opinion that they should be referred to distinct genera.

Dr. G. H. Fowler exhibited the horns of a Fallow Deer belonging to Mr. J. A. R. Wallace, of Loch Ryan, which showed the effect of the removal of one testis on the development of antlers; and made remarks on the effect of different degrees of castration upon antlers, as shown by specimens in the Museum of the College of Surgeons. The continuity of variation displayed in the total lengths, and lengths of brow- and tray-tines, in abnormal antlers in the Natural History Museum, was also commented upon.

Mr. P. Chalmers Mitchell gave an account of his observations on the perforated flexor muscles in certain birds recently dissected in the laboratory in the Society's Gardens.

Messrs. R. R. Mole and F. W. Urich communicated biological notes upon some of the Snakes of Trinidad, with a preliminary list of the species of Ophidians recorded from that island.

A communication was read from M. E. Simon, containing the second portion of a memoir on the Spiders of the Island of St. Vincent, based on specimens obtained through the agency of the Committee for the exploration of the Natural History of the West Indies.

Mr. W. E. Collinge communicated a description of a new species of Slug of the genus *Janella*, from New Zealand, with a detailed account of its anatomy.

A communication was read from Mr. R. J. Lechmere Guppy, containing an account of some Foraminifera from the Microzoic Deposits of Trinidad.

Mr. Arthur E. Shipley read notes on some Nematode Parasites obtained from animals formerly living in the Society's Gardens.

Messrs. F. E. Beddard and P. Chalmers Mitchell gave an account of the anatomy of *Palamedea cornuta* as compared with that of its allies.

A communication was read from Dr. A. G. Butler on a collection of Lepidopterous Insects made by Dr. J. W. Gregory during his recent expedition to Mount Kenia. The specimens were referred to 215 species, of which ten were stated to be new to science.

This meeting closed the session 1893-94.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

The Royal Natural History. Edited by RICHARD LYDEKKER: with Preface by P. L. SCLATER. In six volumes; illustrated with 72 coloured plates and 1600 engravings. Vol. I., pp. i.—xvi.; 1—584. London: F. Warne & Co. 1894.

THE Editor and Publisher of this important work may well be congratulated upon its satisfactory progress. Designed to appear in thirty-six monthly parts, nine of these (or one-fourth of the work) have now been published, and the first six parts complete the first volume, for which the title-page, contents, and index have been issued with part vii.

Commencing with the Mammalia, chapter i. deals with the principles of classification, general structure, and characteristics; chapters ii.—viii. are devoted to the Apes, Monkeys, and Lemurs; chapters ix.—xi. to Bats; chapter xii. to the Insectivora; chapter xiii. to the Cat-tribe; chapter xiv. to Civets, and Wolf and Hyænas; and chapter xv. to Dogs.

The more we have looked into the work the more we have marvelled at the price at which it is being issued. Seeing that each part contains about one hundred pages of letter-press, well-printed and on good paper, fifty or sixty engravings, and two coloured plates, we should consider it cheap at five shillings a part, whereas the actual cost of each number is one shilling net!

It ought to have an enormous circulation, and, as an aid to the diffusion of zoological knowledge, we hope it may. Mr. Lydekker seems to have spared no pains in the preparation of the text, and so far as we have been able to test it, the information in most cases is well up to date. Extracts are given from the most authoritative writers on special groups of animals, and we have only to suggest, by way of improvement, that the titles of the works or articles quoted should be mentioned in foot-notes, in

order that the reader may be enabled to get fuller information, if desired, on particular points which the editor, with a view to economising space, has perhaps been compelled to treat a little too briefly.

As regards illustration, we are inclined to think that in the parts before us this has been a little overdone. There can be no need to give several figures by different artists of the same species; one good figure is all that is required, and a bad one is worse than none at all. We have noted several which are by no means satisfactory, because the drawing is inaccurate, and they would have been better omitted. No one, for example, ever saw a true Wild Cat, *Felis catus*, with a white foot, an Otter with a recurved tail, or a Ferret with a bushy tail like a Marten. The Shrews figured on page 328 are positive deformities, and a Pipistrelle (p. 274), Indian Mongoose (p. 469), Beech Marten (ii., p. 53), Sable (p. 55), and Mink (p. 68), are as unlike the originals as it is possible to make them. Still, these are exceptions, and the majority of the illustrations, especially those drawn by Wolf and Zwecker, are true enough in outline, and characteristic as regards their attitudes.

We trust that, with the issue of the last part, the editor will see his way to give a scheme of General Classification, according to the latest information, and indeed it would have been useful to supply this by instalments at the head of each section. For example, a key to the families and genera of Apes, Monkeys, and Lemurs would have been of great assistance to the uninitiated reader, who without it must experience a sense of great bewilderment in dealing with so large a number of species as are placed before him.

But the aim of the work is distinctly good, and, so far as we are able to judge, it is conscientiously and ably carried out.

British Birds; being Coloured Illustrations of all the Species of Passerine Birds resident in the British Isles, with some Notes in reference to their Plumage. By CLAUDE W. WYATT. 4to. London: W. Wesley & Son. 1894.

MR. WYATT'S name will be favourably remembered in connection with a Monograph of the *Hirundinidæ* which he published in co-operation with Dr. R. B. Sharpe.

The present handsomely illustrated quarto, now before us, deals with the resident British *Passeres*. Fifty species are figured (most of them life-size) on twenty-five plates, and the drawing and colouring are extremely good. So good are they, that there is very little room for improvement; the most noticeable defect being in the outlines of the beaks in the *Corvidæ*, which appear to us to be too small and slender in proportion to the size of the birds. The figures are so grouped as to bring several species of one genus on the same plate, so that the allied forms may be easily compared. The three plates of *Paridæ* should have been brought nearer together, instead of being separated by the interposition of the Dipper and the Reed Bunting, and although the Tree Pipit is not a resident species, it might well have been figured on the same plate as *Anthus pratensis* and *A. obscurus*, for which there is plenty of room, in order that the Meadow Pipit and the Tree Pipit, which are so frequently confounded by ordinary observers, might be compared side by side.

Opposite each plate we find a few lines of explanatory letter-press, of which, it seems to us, there is too little. A page of type would not have been too much to do justice to the subject. The information given relates almost exclusively to the seasonal changes of plumage, and is by no means exhaustive.

No mention is made of the white-headed form of the Long-tailed Tit, and *Parus britannicus* is accepted as a good species without any indication of the characters by which it may be distinguished from *P. ater*. In a long series it seems to us impossible to separate them, the intergradation between the two forms being so gradual. There may be appreciable differences between specimens at both ends of a long series, but the intermediate forms might be referred to either *P. ater* or *P. britannicus* indifferently. This being so, we do not see how the latter can be regarded as a good species.

Mr. Wyatt states (p. 11) that the Rock Pipit is usually associated with rocky sea-coasts where it breeds, and that it frequents also the flat sea-coast. He might have added that it is to a certain extent migratory, and that in spring and autumn it is found inland at a considerable distance from the sea.

The Wood Lark, *Alauda arborea*, is included by Mr. Wyatt amongst the resident British *Passeres*, but there is reason to believe that this bird, like the Pied Wagtail, leaves the country

in large flocks at the approach of winter, and that the northern limit of its winter range takes in the southern counties of England.

We are informed by the Preface that it is proposed to publish as a continuation of this work, and uniform with it, *Illustrations of all the species of Passerine birds which are migrants to the British Islands, omitting the occasional visitors, and in a subsequent volume the resident and migratory Picariæ*. This will be an expensive undertaking, but we trust, for the sake of the enthusiastic author, that the list of subscribers' names (which are received by Messrs. Wesley & Son) may be sufficiently long to justify him in carrying out his intention.

Alternating Generations: a Biological Study of Oak-galls and Gall-flies. By HERMANN ADLER, M.D. Translated and edited by CHARLES R. STRATON. Post 8vo, pp. i—xliii; 1—198. With Coloured Plates and other Illustrations. Oxford: Clarendon Press. 1894.

IN an excellent Introduction of forty pages, with which Mr. Straton paves the way for his translation of Dr. Adler's essay, he gives not only a clear review of the chief literature on the subject of galls, but an instructive *resumé* of the different views which have been expressed by eminent naturalists as to the cause or causes of their formation. Darwin, and many writers before him, held that gall-formation was due to a chemical secretion injected by the gall-insect; Malpighi considered that it acted as a ferment on juices existing in the plant; and this was the view of Réaumur, but he added to it the thermal effect of the egg, and the nature and character of the wound, which varies according to the shape of the ovipositor of each species. Dr. Derham thought the formation was partly due to the act of the plant, and partly to some virulency in the juice, or egg, or both, repositied on the vegetable by the parent animal, and just as this virulency is various according to the difference of its animal, so is the form and texture of the gall excited thereby.

Darwin speaks of galls as produced by a minute atom of the poison of a gall-insect, and compares them to the specific local processes of zymotic diseases. Sir James Paget, in 1880,

expressed the view that "the most reasonable, if not the only reasonable theory, is that each insect infects or inoculates the leaf or other structure of the chosen plant with a poison peculiar to itself."

This, says Mr. Straton, may be taken as the view accepted by scientists until Dr. Adler, of Schleswig, in the essay now translated, showed conclusively that there is no foundation for supposing that the gall-insect injects any irritating secretion whatever; and Beyerinck has proved that the fluid ejected by the gall-fly is without taste or smell, and absolutely unirritating if injected under the skin. It is probably nothing more than a very mild antiseptic dressing applied to the wound made in the plant. Both these authors show plainly that it is not in the gall-mother, but *in the larva*, that we must seek for the cause of gall-growth; and that it is the nature of the salivary secretion, and the manner of feeding of the larva (peculiarities inherited by each species), which give the characteristic growth to the gall.

In the monograph here translated, Dr. Adler has described those oak-galls and gall-flies which are most commonly found in this country, except the Devonshire marble-gall, *Cynips kollari*, which does not occur in Germany north of the Elbe. But as this is one of the most familiar galls on English oaks, the translator has added a description of it in an Appendix. He has also added a synoptical table of galls, which will be extremely useful to those who are just taking up the subject, a short bibliography, and a classified list of the *Cynipidæ*.

Dr. Adler's work was well worth translating, and Mr. Straton has done it very well, elucidating the text with notes of his own, which he has judiciously placed within brackets. On two of the folding coloured plates, which have been very carefully chromolithographed by Messrs. West, Newman & Co. from Dr. Adler's drawings, are depicted a large number of galls with, in some cases, the flies magnified; and in another plate, in which the figures are all drawn from photographs, we see the different forms of ovipositor, with the egg, when accompanying it, drawn to the same scale. The subject is one which, we can well imagine, many people would find very fascinating.

THE ZOOLOGIST

No. 213.—September, 1894.

THE NEW ACT FOR THE PROTECTION OF BIRDS' EGGS.

AFTER a prolonged discussion, extending over two sessions, Parliament has at length decided that it is desirable to make the taking of certain birds' eggs illegal, or, in other words, to give those who are so minded a statutory power of protecting eggs of such species as in their opinion stand in need of greater protection than they receive under the 'Wild Birds Protection Act, 1880.'

For several reasons, we consider this fresh legislation unnecessary. In the first place, the eggs of the most important species, that is, the eggs of all game-birds, and those of Swan, Wild-duck, Teal, and Wigeon, are already protected by the game-laws (1 & 2 Wm. IV. c. 32, sect. 24), and in Ireland this protection is extended to Quail, Landrail, Wild-duck, or other wildfowl, Plover, Snipe, and House-dove or Pigeon.

In the next place, the law of trespass can always be enforced by summons against unauthorised egg-stealers who may be found trespassing in search of eggs on private ground; and finally, the Wild Birds Protection Act, 1880, makes it illegal to kill any bird (with certain exceptions) during the breeding season, or between the 1st March and the 1st August, providing a heavier penalty for killing those which are specially named in the schedule to the Act, than for those of less importance which are not so mentioned.

We have always maintained that if the sitting bird is properly protected during the period of incubation, there is no necessity to impose a penalty for taking the eggs; for even if the first egg or eggs be taken, and the nest is deserted, there is always the good chance, if not the certainty, of the parent bird laying again elsewhere, and eventually rearing her young in safety.

Twenty years ago, a Committee appointed by the British Association to report upon the subject expressed and emphasized this view, and stated, moreover, that the effect of birds nesting on species whose numbers are not decreasing (and their name is legion) was inappreciable, and that consequently there was no need of any legislative interference with the practice. This must be apparent to everyone who considers that our forefathers have for generations in their boyhood persistently taken the eggs of such birds as Blackbirds, Thrushes, Hedgesparrows, Robins, Chaffinches, Buntings, Pipits, Wagtails, and other "common" species, and that, notwithstanding this, these birds are still "common"; while it seems to us equally evident that such kinds of Plovers, Snipe, and Wildfowl as have ceased to be common *as breeding species*, have become so, not by reason of the continual destruction of their eggs, but in consequence of the destruction of their natural nesting haunts through advancing civilization, and the cultivation and drainage of waste lands.

The sea-fowl, prior to 1869, when the first modern Act of Parliament was passed for their protection, had become almost exterminated on some parts of the coast, not because their eggs were annually taken from them, but because parties of thoughtless and inhuman "gunners" (wholly unworthy of the name of "sportsmen" or "naturalists") were in the habit of going out in boat-loads under the cliffs, and barbarously shooting the old birds while they had eggs or young in their nests. The prohibition of this practice has saved many species from extinction.

It seems to us that what held good then, in the case of sea-fowl, holds good still, in regard to land birds. Nothing was needed for present requirements but a strict enforcement of the Act of 1880, which, as we have said, protects the sitting bird during the breeding season; and if (by reason of the fact that a first offence is punishable only by a reprimand and payment of costs) this Act is found in practice to be less effectual than it should be, nothing would have been simpler than to amend it

by imposing a fine for a first offence, and increasing it for a subsequent one.

The legislature, however, has thought otherwise; a Bill to protect eggs was introduced (by Sir Herbert Maxwell), and had to be discussed upon its merits. The principle of the Bill was to protect certain named species, on the ground of their asserted scarcity, and the House of Commons deemed this reasonable. The Bill passed the third reading, and, with some slight amendment, went up to the House of Lords. Their lordships pulled it to pieces as ruthlessly as any schoolboy ever pulled a nest when unable otherwise to reach the eggs, and finally so altered it in principle that its author could not recognise it, and was compelled to repudiate it. The reason for this was that the whole principle of the Bill had been changed. Instead of protecting *species*, their lordships were advised (ill-advised, as we think) that it would be better to protect *areas*, and so they willed it.

The result of this alteration naturally would be, (1) to protect a number of species which might not only stand in no need of protection, but whose increase might be, for good reasons, very undesirable; (2) to promote constant squabbling over boundaries; and (3) to give local dissatisfaction at the legality of birds nesting in one parish, and its illegality in another. Under these circumstances Sir Herbert Maxwell could hardly be blamed for declining to accept this material alteration of his Bill, and so it stood over until this session, when a compromise was arrived at.

The nature of this compromise will be seen from a perusal of the Act, which has at length received the Royal assent, and which we here subjoin.

It is now in the power of the County Council, upon the request of an applicant under this Act, to apply for an order of the Home Secretary to take one or other of the two courses proposed; namely, an order prohibiting the taking of eggs of any named species, or the taking of any eggs within a certain specified or defined area.

In the event of such order being obtained, the County Council will have to give public notice of it three weeks before it can be enforced, (1) by advertisement in two local papers, (2) by putting up notices in two conspicuous spots near the place in which the order is to operate, and (3) in such other manner as the Secretary

of State may direct, or as the Council may think expedient, with a view to making the order known to the public.

It does not need much reflection to be convinced that the machinery which will have to be put in force before a "protection order" can be obtained is of a much more intricate and costly nature than the simple "summons" under the old Act. Whether many people will attempt to put this machinery in motion, the cost of which may be chargeable on the rates, remains to be seen. We confess that we are not over sanguine on the subject. At the same time, we shall be very glad if, contrary to our expectations, the new Act proves workable, and acceptable, and produces in time the good results which our legislators claim for it.

The following is the text of the Act (57 & 58 Vict. c. 24), which received the Royal assent on the 20th July last, and was issued too late to appear in our August number:—

AN ACT TO AMEND THE WILD BIRDS PROTECTION ACT, 1880.

BE it hereby enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. *Short title and construction.*—This Act may for all purposes be cited as the Wild Birds Protection Act, 1894, and shall be construed as one with the Wild Birds Protection Act, 1880 (hereinafter referred to as "the principal Act"), except as hereinafter provided.

2. *Prohibition of taking or destroying Eggs.*—A Secretary of State may, after the passing of this Act, upon application by the County Council of any administrative county by order prohibit—

- (1). The taking or destroying of wild birds' eggs in any year or years in any place or places within that county; or
- (2). The taking or destroying the eggs of any specified kind of wild birds within that county or part or parts thereof, as recommended by the said County Council and set forth in the said order.
- (8). The application by the County Council shall specify the limits of the place or places, or otherwise, the particular species of wild birds to which it is proposed that any prohibition in the order is to apply, and shall set forth the reasons on account of which the application is made.

3. *Order as to application of principal Act to other Birds.*—A Secretary of State may, on the representation of the council of any administrative county, order that the principal Act shall apply within that county or any part or parts thereof to any species of wild bird not included in the schedule of that Act, as if that species of wild bird were included in the schedule of that Act, and on the making of such order that Act shall apply accordingly.

4. *Publication of Order.*—(1). The council of an administrative county shall in every year give public notice of any order under this Act which is in force in any place within their county during the three weeks preceding the commencement of the period of the year during which the order operates.

(2). Public notice under this section shall be given—

(a). As regards each place in which an order operates, by advertising the order in two local newspapers circulating in or near that place;

(b). By fixing notices of the order in conspicuous spots within and near each place in which the order operates; and

(c). In such other manner as the Secretary of State may direct, or as the council may think expedient, with a view to making the order known to the public.

5. *Penalties.*—Any person who, after the passing of this Act, shall take or destroy, or incite any other person to take or destroy—

(a) the eggs of any wild birds within any area specified in the order; or

(b) the eggs of any species of wild bird named in the order, shall, on conviction before any two justices of the peace in England, Wales, or Ireland, or before the sheriff in Scotland, forfeit and pay for every egg so taken or destroyed a sum not exceeding one pound.

6. *Expenses.*—Any expenses incurred by the council of a county under this Act may be defrayed by that council as expenses for general county purposes within the meaning of the Local Government Act, 1888 (51 & 52 Vict. c. 41), or, so far as respects Scotland, the Local Government (Scotland) Act, 1889 (52 & 53 Vict. c. 50).

7. (1). *Application to Scotland and Ireland.*—This Act shall

apply to Scotland with the substitution of the Secretary for Scotland for a Secretary of State.

(2). This Act shall apply to Ireland, with the substitution of the Lord Lieutenant for a Secretary of State, and of the grand jury for the council of an administrative county, and any expenses incurred in carrying this Act into effect in Ireland shall be defrayed out of grand jury cess.

THE PTARMIGAN IN LAKELAND.

By REV. H. A. MACPHERSON, M.A.

ONE of the best known histories of the county of Cumberland is that of John Denton, of Cardew, near Carlisle. This gentleman married a daughter of Sir John Dalston, of Dalston Hall, and is said to have been imprisoned in the Tower of London, in consequence of a quarrel between himself and Dr. Robinson, Bishop of Carlisle. During his incarceration John Denton made extracts from the records kept in the Tower. He compiled from these his *History of Cumberland*, of which several copies, or rather editions (for they all differ), are in existence. The original copy is lost, but must have been written about 1610. In 1887 the Cumberland and Westmorland Archæological Society published an edition of the work, based on a comparison of all the available copies, or editions, existing in MS., and edited by my friend Chancellor Ferguson, of Carlisle. This gentleman has just shown me a newly-discovered MS. copy of Todd's so-called edition. It formerly belonged to Dr. Joseph Smith (who was Provost of Queen's College, Oxford, from 1730 to 1756), and is now the property of the Rev. J. R. Magrath, Provost of Queen's. It is entitled '*An Account of the County of Cumberland, 1737.*' Under the title of Wasdale, I find an interesting and entirely new passage, which is of considerable interest to naturalists. It is as follows:—"Further northwards, ascending by ye course of ye River Irt (near unto ye Bankes whereof are vast and strong fells (great mountains) a large Territory of vast forest ground falls in view from ye summit of ye great mountain called Scaw fell, wch may dispute of height any Hill in Cumberland) at ye foot wherof appears Wasdale chapel, which Dale whether denominated from ye Wast land wherein ye same is situate or from ye washing of

ye said River, is left to ye judicious to conjecture. This territory being part of ye large forest of Coupland (query if it is not now reputed part of Enderdale forest) was formerly well replenished wth Red Deer wch are now reduc'd to a small number, & upon ye mountains & fells there is a store of black game and a *certain species of pouts wth white feathers & other pied*, wch is a rarity particular to these fells, Skiddaw hill, & some other fells in this County, & not to be found elsewhere (as we are informd) in any other County of ye Kingdom." There is a note at the bottom of the same page:—"These pouts are found upon ye Fells between Shap & Kendal in Westmorland. Lancelot Jackson." I do not know what species can be referred to, unless it be the Ptarmigan, *Lagopus mutus*. I do not think that the writer referred to pied or albino Red Grouse, because such specimens occur as irregularly in the Lake District as elsewhere. Certainly this supposition, that the Ptarmigan is the species indicated, fits in well with the various facts explained in my previous notes upon this subject.* With regard to the footnote, I may add that my friend the vicar of Stainmoor, who is a native of Westmorland, assured me two years ago that one of the last of the Lakeland Ptarmigan was killed near Shap by one of his kinsmen; such, at least, is the traditional belief in his family.

If the notice in the Denton MS. relates to the Ptarmigan, it carries our information about local Ptarmigan backwards for sixty years, a fact which in itself will be thought by some to strengthen the argument. Upon the opposite page of the MS. to that above quoted there is the following entry:—"As Bustards, wch are very scarce, & only to be seen on Salisbury plane. They are a pretty large Bird, & run as fast as a hare along ye ground for a considerable time before they can take flight, & are very difficult to be taken; as they will seldom come wth in a gun shot. A Bustard eats well, and has a fine flavour." This remark was apparently called forth by the passage relating to the "species of pouts" on the opposite page, but had no direct bearing upon the context. I ought perhaps to add the reminder that the words "*a certain species of pouts*" are underlined in the MS. Had the writer referred to pied Grouse, he would hardly have called them a "species of pouts," but would have written of them as moorfowl.

* "The Ptarmigan in Lakeland," 'Zoologist,' 1893, pp. 97—99.

A LIST OF BIRDS OBSERVED IN THE DISTRICT OF BARMOUTH.

By F. C. RAWLINGS.

OF late years many local lists of birds have from time to time appeared, and so great and increasing is the interest taken by a great portion of the public in Ornithology that little excuse is needed for the publication of yet another list. With two or three exceptions, all the species enumerated have been either procured by, or otherwise come under the personal observation of, the compiler, during a residence of nearly twenty years in the locality. The district embraces a circle of about twelve miles from Barmouth as a centre. I have followed the classification adopted by Mr. Howard Saunders in his 'Manual of British Birds,' and am indebted to my friends Dr. Hughes and Mr. Wilson Roberts for their valuable assistance with the Welsh equivalents, which are given in parentheses.

MISSAL THRUSH, *Turdus viscivorus* (Pen-y-llwyn). Resident, common.

SONG THRUSH, *T. musicus* (Y Fronfraith, or Bronfraith). Resident, common.

REDWING, *T. iliacus* (Coch dan aden; asgell coch). Some winters very numerous.

FIELDFARE, *T. pilaris*. (Socan Eira). In severe winters common, but always rarer than the preceding species.

BLACKBIRD, *T. merula* (Aderyn du; Y Fwyalchen). Resident, common.

RING OUZEL, *T. torquatus* (Y Fwyalchen; Mwyalchen y Graig). Plentiful amongst the mountains, preferring the craggy parts, and nesting on heather-covered ledges.

WHEATEAR, *Saxicola cenanthe* (Tinwen-y-Garreg). Very common; nests chiefly in rabbit-burrows and in stone walls.

WHINCHAT, *Pratincola rubetra* (Aderyn yr Eithin). Common.

STONECHAT, *P. rubicola* (Captain Eithin; Crac y Garreg). Resident, common; just recovering from the winter of 1889, which thinned them terribly. During the frost in that year they were picked up dead by dozens.

REDSTART, *Ruticilla phœnicurus* (Llostrhyddun). Very common.

BLACK REDSTART, *R. titys*. A bird of this species, shot near Towyn, was noticed in 'The Field.'

ROBIN, *Erythacus rubecula* (Robin Goch). Resident, common.

WHITETHOAT, *Sylvia cinerea* (Barfawg). Common.

LESSER WHITETHROAT, *S. curruca*. Much rarer.

BLACKCAP, *S. atricapilla* (Penddu). Common; an increasing species.

GARDEN WARBLER, *S. hortensis*. Rarer than preceding.

GOLDCREST, *Regulus cristatus* (Dryw Benfelen). Resident and very common.

CHIFFCHAFF, *Phylloscopus rufus*. Common.

WILLOW WREN, *P. trochilus* (Dryw yr Helyg). Common.

WOOD WREN, *P. sibilatrix* (Gwra). Plentiful; have found five nests in one small wood.

SEDGE WARBLER, *Acrocephalus phragmitis*. Common.

GRASSHOPPER WARBLER, *Locustella naevia*. First heard six years ago, and is increasing annually.

HEDGESPARROW, *Accentor modularis* (Siani Lwyd). Common, resident.

DIPPER, *Cinclus aquaticus* (Mwyalchen-y-Dwr). Resident, common; nesting on every mountain stream.

LONG-TAILED TIT, *Acredula caudata* (Sywedw). Common, resident.

GREAT TIT, *Parus major* (Penloyn). Resident, common.

COAL TIT, *P. ater* (Pela Penddu). Common, resident.

MARSH TIT, *P. palustris* (Pela Llwydwyn). Not so common as the preceding species.

BLUE TIT, *P. cæruleus* (Glas Bach). Common, resident.

WREN, *Troglodytes parvulus* (Dryw Bach). Common and ubiquitous, from top of Cader Idris to the edge of the sea.

TREE CREEPER, *Certhia familiaris* (Aderyn Pen Bawd). Resident, common.

PIED WAGTAIL, *Motacilla lugubris* (Brech y Fuches). Common and partially resident.

WHITE WAGTAIL, *M. alba* (Brech y Fuches). Numerous on the spring migration.

GREY WAGTAIL, *M. melanope* (Tinsigl lwyd). Fairly plentiful.

YELLOW WAGTAIL, *M. Raii* (Tinsigl Felen). Observed but rarely.

TREE PIPIT, *Anthus trivialis* (Ehedydd y coed). Common.

MEADOW PIPIT, *A. pratensis* (Ehedydd Bach). Resident, common.

ROCK PIPIT, *A. obscurus* (Gwas y gog). Common on the sea-cliffs.

RED-BACKED SHRIKE, *Lanius collurio* (Cigydd Cefngoch). Common.

SPOTTED FLYCATCHER, *Muscicapa grisola* (Gwybedog). Common.

PIED FLYCATCHER, *M. atricapilla* (Gwybedog Brith). Common, in suitable localities.

SWALLOW, *Hirundo rustica* (Gwennol). Common.

MARTIN, *Chelidon urbica* (Gwennol Fronwen). Rarer.

SAND MARTIN, *Cotile riparia* (Gwennol y Glenydd. Not scarce.

GREENFINCH, *Ligurinus chloris* (Aderyn Melyn). Common.

GOLDFINCH, *Carduelis elegans* (Nicol; Jacknico). Rare in summer; common in winter.

SISKIN, *Chrysomitris spinus* (Dreiniawg). Observed most winters.

CHAFFINCH, *Fringilla cœlebs* (Y Bink; Asgell Fraith). Resident and common.

BRAMBLING, *F. montifringilla*. Two procured from a small flock in April, 1885.

LINNET, *Acanthis cannabina* (Llinos). Common, resident.

REDPOLL, *A. rufescens* (Llinos Bengoch). Occurs in spring generally, but has nested here.

BULLFINCH, *Pyrrhula europæa* (Aderyn-y-Berllan). Fairly numerous.

CORN BUNTING, *Emberiza miliaria* (Bras-yr-yd). Resident, common.

YELLOW BUNTING, *E. citrinella* (Llinos Felen). Common.

CIRL BUNTING, *E. cirrus*. Has occurred once near Borddu.

REED BUNTING, *E. schoeniclus* (Golfan y gors). Resident and common.

SNOW BUNTING, *Plectrophanes nivalis* (Aderyn yr cira). Generally observed in winter and early spring.

STARLING, *Sturnus vulgaris* (Drudwy). Resident, exceedingly common.

CHOUGH, *Pyrrhocorax graculus* (Bran big coch). A decreasing species, nesting sparingly, or not at all, in its former haunts. An egg, now in possession of the Rev. Mr. Tomlinson, Pontefract, was picked up in the marsh under Harlech in April, 1888.

JAY, *Garrulus glandarius* (Screch-y-coed). Common.

MAGPIE, *Pica rustica* (Pioden). Common.

JACKDAW, *Corvus monedula* (Coegfran). Common.

RAVEN, *C. corax* (Cigfran). Fairly plentiful, and does not seem to be diminishing. Breeds in most suitable crags on the mountains.

CARRION CROW, *C. corone* (Bran). Common.

HOODED CROW, *C. cornix* (Bran Hedlyd). One bird in fine plumage was seen for some weeks in the autumn of 1884.

ROOK, *C. frugilegus* (Ydfran). Not common in the immediate vicinity of Barmouth.

SKY LARK, *Alda arvensis* (Ehedydd). A common resident.

WOOD LARK, *A. arborea*. Has occurred in winter.

SWIFT, *Cypselus apus* (Wennol-y-dwr). Common.

NIGHTJAR, *Caprimulgus europæus* (Aderyn-y-troell). Common.

GREEN WOODPECKER, *Gecinus viridis* (Cnocell-y-coed). Common.

GREAT SPOTTED WOODPECKER, *Dendrocopus major*. Much rarer than the preceding.

KINGFISHER, *Alcedo ispida* (Glas y dorlan). Not uncommon in winter.

CUCKOO, *Cuculus canorus* (Y-gog). Much rarer this year than in 1893, when it was here in great numbers. Is this owing to the long dry summer?

BARN OWL, *Strix flammea* (Aderyn-y-corph). Common.

LONG-EARED OWL, *Asio otus* (Dalluan Gorniog). Occurs rarely.

SHORT-EARED OWL, *A. accipitrinus* (Dalluan Glustiog). Met with most winters.

TAWNY OWL, *Syrnium aluco* (Dalluan Frech). Resident, common.

COMMON BUZZARD, *Buteo vulgaris* (Boncath, but locally called "Barcutan," the Kite).^{*} Formerly common, but of late years, owing to the persistent use of poison and traps, becoming rarer, and many miles of mountain may be traversed without having a glimpse of this graceful bird, or hearing its mewing cry.

SPARROWHAWK, *Accipiter nisus* (Cudyll glâs). Not common.

PEREGRINE FALCON, *Falco peregrinus* (Hebog Dramor). A regular visitor, but in limited numbers.

MERLIN, *F. æsalon* (Gwalch Lleiaf). Common in autumn.

KESTREL, *F. tinnunculus* (Cudyll goch). Resident, common.

^{*} See the Welsh names of Birds of Prey, Zool. 1891, p. 173.

CORMORANT, *Phalacrocorax carbo* (Morfran). Resident, common.
 SHAG, *P. graculus* (Morfran Werdd). Not so common as *Carbo*, but breeds within the Bay.

GANNET, *Sula bassana*. Occasionally seen.

HERON, *Ardea cinerea* (Creyr glâs). Resident, common.

BITTERN, *Botaurus stellaris* (Aderyn y Bwn). Rare; one shot in December, 1876.

GREYLAG GOOSE, *Anser cinereus* (Gwydd Wyllt). More often seen than obtained.

WHITE-FRONTED GOOSE, *A. albifrons* (Gwydd dalcen wen). Several obtained at Llwyngweil some winters ago.

BEAN GOOSE, *A. segetum*. One specimen obtained from a large flock in 1881.

WHOOPEE, *Cygnus musicus*. Several times observed in winter, but not obtained.

COMMON SHELDRAKE, *Tadorna cornuta* (Hwyaden yr Eithen). Very common, breeding in the neighbourhood.

WILD DUCK, *Anas boschas* (Chwiaden wyllt). Resident, common.

SHOVELLER, *Spatula clypeata* (Chwiaden lydanbig). Occurs sparingly.

PINTAIL, *Dafile acuta* (Chwiaden lostfain). Commoner than the preceding.

TEAL, *Querquedula crecca* (Corshwyad). Common.

WIGEON, *Mareca penelope* (Chwiwell). In vast flocks most winters.

POCHARD, *Fuligula ferina* (Hwyaden bengoch). A winter visitor.

SCAUP, *F. marila*. Pretty common in winter.

GOLDENEYE, *Clangula glaucion*. Pretty common in winter.

LONG-TAILED DUCK, *Harelda glacialis* (Hwyaden lostfain). One obtained, a bird of the year.

SCOTER, *Edemia nigra* (Chwiaden-y-mor). Common in winter.

VELVET SCOTER, *Æ. fusca*. A few have been seen in company of the preceding species.

GOOSANDER, *Mergus merganser* (Hwyad daneddog). Has occurred on many occasions in winter.

RED-BREADED MERGANSER, *M. serrator* (Trochydd Brongoch). Common every winter.

WOOD PIGEON, *Columba palumbus* (Yscythan). Resident and common.

STOCK DOVE, *C. ænas*. Occurs pretty frequently, but never observed nesting.

ROCK DOVE, *C. livia*. A few pairs nest in the neighbourhood.

TURTLE DOVE, *Turtur communis* (Colomen Mair). Two seen and one obtained, autumn, 1892.

PALLAS'S SAND GROUSE, *Syrnhaptes paradoxus*. Said to have been seen by a gamekeeper and others at Mochras during the visitation of 1888, but no specimens were procured.

RED GROUSE, *Lagopus scoticus* (Grugiar). Occurs on the heather-clad mountains and moors.

PHEASANT, *Phasianus colchicus* (Ceiliog-y-coed). Flourishes only where preserved.

PARTRIDGE, *Perdix cinerea* (Petrissen). Common.

QUAIL, *Coturnix communis* (Sofliar). One specimen noted.

LANDRAIL, *Crex pratensis* (Rhegan yr yd). Common.

SPOTTED CRAKE, *Porzana maruetta*. A few shot every autumn.

WATER RAIL, *Rallus aquaticus* (Rhegan yr dwr). Common.

WATERHEN, *Gallinula chloropus* (Iar-y-dwr). Common.

COOT, *Fulica atra* (Cwtiar). Not generally distributed, but numerous where it occurs.

RINGED PLOVER, *Ægialitis hiaticula*. Resident, very common.

GOLDEN PLOVER, *Charadrius pluvialis* (Chwilgorn y mynydd). Breeds on the moors.

GREY PLOVER, *Squatarola helvetica*. Occurs in limited numbers in winter.

LAPWING, *Vanellus vulgaris* (Cornchwiglan). Resident and very common.

TURNSTONE, *Streptilas interpres* (Hutan y mor). In spring and autumn. Often seen as late as June.

OYSTERCATCHER, *Hematopus ostralegus* (Pioden y mor). Resident, common.

GREY PHALAROPE, *Phalaropus fulicarius* (Pibydd Llydan-droed). Noticed commonly on the autumn migration.

WOODCOCK, *Scolopax rusticula* (Cyffyllog). Plentiful.

SNIFE, *Gallinago cælestis* (Giach). Common, resident.

JACK SNIFE, *G. gallinula* (Myniar). Common.

DUNLIN, *Tringa alpina* (Pibydd Rhuddgoch). Common, and probably resident, as a limited number may be seen all through the summer.

LITTLE STINT, *T. minuta* (Pibydd Lleiaf). A few procured.

CURLEW SANDPIPER, *T. subarquata*. Generally with Dunlin, early autumn.

PURPLE SANDPIPER, *T. striata*. Fairly common, and observed as late as the middle of June.

KNOT, *T. canutus* (Myniar Goesgoch). Some winters in vast flocks, others in limited numbers.

SANDERLING, *Calidris arenaria* (Pibydd y Yraeth). Occurs in small flocks in spring and autumn.

COMMON SANDPIPER, *Totanus hypoleucus* (Pibydd). Very common.

COMMON REDSHANK, *T. calidris* (Coesgoch). Resident.

GREENSHANK, *T. canescens* (Coeswerdd). Rare.

BAR-TAILED GODWIT, *Limosa lapponica* (Rhostawg). Seen chiefly in autumn.

BLACK-TAILED GODWIT, *L. belgica* (Rhostawg). Rare; one procured in August, 1893.

CURLEW, *Numenius arquata* (Gilfyn hir). Resident, common.

WHIMBREL, *N. phaeopus* (Coef Gilfin hir). Common during the latter part of May, fewer noticed in autumn.

BLACK TERN, *Hydrochelidon nigra* (Ysgraen ddu). Single birds occasionally seen.

COMMON TERN, *Sterna fluviatilis* (Wennol-y-mor). Occurs sparingly.

ARCTIC TERN, *S. macrura* (Wennol-y-mor). Rare.

LITTLE TERN, *S. minuta* (Wennol-y-mor). Common.

LITTLE GULL, *Larus minutus*. In severe weather of March, 1886.

BLACK-HEADED GULL, *L. ridibundus* (Gwylan-bendu). Common in winter; single birds occasionally in summer.

COMMON GULL, *L. canus* (Gwylan). Very common in winter.

HERRING GULL, *L. argentatus* (Gwylan). Resident, common.

LESSER BLACK-BACKED GULL, *L. fuscus*. In limited numbers.

GREAT BLACK-BACKED GULL, *L. marinus*. Commoner than last. Nests on islands in the lone tarns, also off the coast.

GLAUCOUS GULL, *L. glaucus*. Several immature birds procured during severe frosts.

KITTIWAKE, *Rissa tridactyla* (Gwylan benwen). Common.

GREAT SKUA, *Stercorarius catarrhactes* (Barcutan-y-mor). Frequently seen during the herring-fishing season.

POMATORINE SKUA, *S. pomatorhinus*. One in full plumage, May, 1893.

RICHARDSON'S SKUA, *S. crepidatus*. Occasionally.

RAZORBILL, *Alca torda* (Llwrs). Common.

COMMON GUILLEMOT, *Uria traile* (Gwylawg). Common.

LITTLE AUK, *Mergulus alle* (Garfyl Bach). Many washed ashore dead in 1887.

PUFFIN, *Fratercula arctica* (Pal). Common in summer.

GREAT NORTHERN DIVER, *Colymbus glacialis* (Trochydd Mawr). Occurs every winter.

RED-THROATED DIVER, *C. septentrionalis* (Trochydd gwddfgoch). Common every winter.

GREAT CRESTED GREBE, *Podiceps cristatus* (Gwyach gorniog). Not common; a few have been obtained at intervals.

SCLAVONIAN GREBE, *P. auritus*. Commoner; in some winters many occur.

LITTLE GREBE, *P. fluviatilis* (Gwyach Lleiaf). Resident and common.

FULMAR, *Fulmarus glacialis* (Gwylan y graig). Occurs rarely.

MANX SHEARWATER, *Puffinus anglorum* (Gwylan Manawg).

STORM PETREL, *Procellaria pelagica* (Gwylan y weilgi). Several obtained; driven in during severe storms.

NOTES AND QUERIES.

MAMMALIA.

Variation in the Colour of the Fox.—A short time since I had the pleasure of inspecting some twelve or fourteen heads and "brushes" of Foxes, all obtained, I believe, from the hunting-grounds of the "New Forest," "East Dorset," and "South Wilts" Hounds, within the last season or two. Individual variation would not, perhaps, be noticed in a particular head or tail if seen alone, but when placed together the contrast is marked and interesting. The ordinary red-brown head and light grey-brown tail with *white* "tag" is undoubtedly the most common, but in one or two instances the heads were of a much darker hue, whilst, on the other hand, two at least were almost as grey as a rabbit; again, the "brushes" varied in an equal if not greater degree, from light to dark, and four or five of the number had no white tip. To some extent, no doubt, age, sex, and season will account for this variation; for I observed that the lighter or darker hue was occasioned by the longer hairs being tipped with black or grey, which in a measure partially hid the "red" fur beneath. The lightest coloured head was obtained in March last, and was altogether a pale

specimen, even the back of the ears being brown instead of the usual velvety black. This appeared to be the head of a full-grown Fox, but not very old, judging from its teeth; indeed, in alluding to the light colour, I do not refer to broken-teethed, grey-muzzled creatures resembling an old dog. Whether the dark heads and tails, in the hands of the taxidermist, usually belong to a similarly dark-coloured body, I am unable to say; but it is not necessarily so, as the following will prove. In November last a Fox with a very dark tail was observed to frequent a furze-brake on the borders of a wood; eventually it was hunted and killed, and I saw both head and "brush"; the latter was unusually dark, with no white tip, but the head was of the ordinary rufous colour, and, most remarkable, it had a conspicuous *white* mark—rather elongated, about the size of a sixpence—just in the centre of the forehead. I had previously seen one somewhat similarly marked, but in that case the white spot was not very large, although plainly visible at a little distance. During last winter I was informed that a Fox had been seen in East Dorset with white fore-feet, but I have heard nothing of it since; all the Foxes I have ever seen had, as usual, *black* "pads."—G. B. CORBIN (Ringwood, Hants).

Squirrels and Conifers.—Mr. A. O. Walker, in the last-published part of the Chester Society's 'Proceedings' (No. 4, p. 203), writes:—"I have a good many Conifers of various kinds in my grounds, at Colwyn Bay, and I should guess almost as many Squirrels. At any rate, it is certain that if each Squirrel bit off only one leading shoot in each year, I should not have an unmolested fir-tree in the place; whereas, on the contrary, it would require a long and careful search to find a single tree so disfigured. It is well known that Conifers sometimes lose their leaders from other causes in places where there are no Squirrels."

Cats catching Butterflies and Moths.—Some Cats have quite an entomological taste, especially in the way of catching and devouring crickets and cockroaches; indeed, an old wife's theory I have often heard is that Cats grow thin from eating them. With regard to Lepidoptera, both diurnal and nocturnal, their movements are, as a rule, quicker and more out of reach from pussy's sharp claws, but I am sure that many entomologists will bear me out when I say that Cats will often catch moths with great dexterity. A friend of mine, who has a large garden, used often to remark how his Cat would, of an evening, lie in wait and catch moths, especially some of the larger species; and on one occasion I received a good specimen of the death's-head moth taken by this feline collector. Such an instance is far from unique, for other species of moths have from time to time been obtained under similar circumstances. I have also seen a Cat catch and chew—I can scarcely say eat—both the garden white (*Pieris rapæ*) and orange-tip butterflies. I believe, however, that few, if any, Cats catch moths or butterflies

for food, but pursue them as they would a wind-driven leaf—or indeed anything else that moves—merely for sport.—G. B. CORBIN (Ringwood, Hants). [See a note on this subject in the January number, p. 25.—ED.]

BIRDS.

Albatross at the Færoe Isles.—Before sailing for Færoe in June last, in the yacht 'Daydream,' I had heard from Prof. Newton of the capture of an Albatross there. In Thorshavn, Herr Seysselmand H. C. Müller entrusted me with the complete MS. of his 'Avifauna of Færoe,' wherein the latest items recorded were—"151. *Oriolus galbula*, L. 1893," and "152. *Albatross*: ? *Mygganaes*." Herr Müller told me that the latter bird was shot there, and that he was informed it had frequented the island for forty years, living in amity with the Gannets. But at last it was shot because it acted as sentinel for the Gannets, and the people could not catch the latter asleep when they went to levy their usual toll of birds. The following day, after seeing Herr Müller (who told me he believed I could purchase the bird from Mr. Petersen, of Naalsøe, for 20 krone), we crossed to that island. Mr. Petersen was not at home, but his wife was. She spoke almost perfect English, and repeated the story of the Albatross, mentioning the same period of time (forty years). I saw the bird—a lovely skin, prepared by Mr. Petersen, who had purchased it in the flesh from the (*Mygganaes*?) man who shot it. I left the offer for it of 20 krone, but on returning to Thorshavn some weeks later I learnt that it had gone to the Kjobenhavn National Museum—a fitting resting-place for it; and on reaching home I heard that it had been identified there as the Yellow-billed Albatross, *Diomedea melanophrys*. On arriving at Frazerburgh and leaving the yacht, in end of July, I went to Peterhead, to examine once more the Albatross in the Museum there, which is labelled *Diomedea melanophrys*. The two birds, so far as I could judge, were in every respect similar, except that the *Mygganaes* specimen, fully adult, had no black superciliary streak. The Peterhead specimen, identical in size, had a strongly-marked very black (dusky at the edges?) superciliary streak, and, if the same species, would be possibly younger than the *Mygganaes* specimen. Referring to my journals of 1882, May 16th, I find that, in company with Mr. George Sim, of Aberdeen, I visited the Peterhead Museum, and made the following note:—"*Diomedea melanophrys*. This specimen was killed June 15th, 1878, in lat. 80° 11' N., long. 4' E., and was presented to the Museum at Peterhead by Capt. David Gray, of the steam whaler 'Eclipse,'" as appears by the label on the case as it now stands in the handsome new Museum buildings. I have now to add that on July 18th, when off the Orkneys, and twenty miles from land, I saw an undoubted Albatross, apparently about the same size as the above-mentioned specimens. It was also seen by our captain as he stood beside me. But it was distinctly an immature bird, judging from

the brown and mottled plumage of the back. I mention it here in connection with the Færoese specimen, but will write more fully of it later. Since penning the above I have ascertained, through Mr. Harold Raeburn, that the Albatross referred to is at present in the possession of a Mr. Andersen, not in the Museum. Mr. A. says it is *D. melanophrys*, and Herr Winge confirms this. Mr. Raeburn adds, "It is said that it has been living for thirty years amongst Gannets on Mygganaes." I think I heard the period put at from thirty-five to forty years both by Herr Müller and Mr. Petersen. It may possibly turn out that it does not belong to the species *D. melanophrys*, but to a closely allied form with black eyebrows which inhabits the N. Pacific, described by Mr. W. Rothschild as *D. immutabilis*, and found by his collectors breeding in numbers in Laysan. But the bird seen by me in Færoe, in Mr. Petersen's possession at Naalsøe, had no black eyebrow, or only the very faintest trace; about the same difference existed as between a Common Guillemot's *spectacle streak* and that of the so-called Bridled Guillemot. It seems to me that the Peterhead bird and the Færoe specimen are indeed as closely allied as the two forms just mentioned; but I cannot say anything more decisive without further knowledge of the genus than I at present possess. It would be desirable to know more about the geographical range of these northern and southern Albatrosses, both during their sedentary nesting season, and during the period of what our German friends would call their "Wanderungen."—J. A. HARVIE BROWN (Dunipace, Larbert, N.B.).

While on a visit to the Færoe Isles last spring, I was shown a skin of an Albatross which had been shot by a fisherman at Mygganaes, the most western island of the group. I took the following dimensions:—Length from tip of beak to tip of tail, 3 ft. 1 in.; beak, $4\frac{1}{2}$ in.; wing (closed), 1 ft. $7\frac{1}{2}$ in.; foot, 5 in. This is evidently not the Wandering Albatross, but more probably the Yellow-billed Albatross, as I think it is called (*Diomedea melanophrys*). I have no book of reference by me as I write. Can this bird have found its way so far north? or has it escaped from some passing ship?—H. L. POPHAM (21, Ryder Street, St. James's, S.W.).

Cuckoos calling on the Wing.—According to my experience, Cuckoos constantly call on the wing during the breeding season, uttering the usual note, as well as the note which sometimes follows it, and which is something like the hubble-bubble sound of a hookah-pipe, as recently suggested by the Rev. Julian Tuck ('The Field,' June 9th, 1894), who attributes this note to the female. I was always under the impression that it was produced by the male, as I have certainly frequently heard the same Cuckoo utter the ordinary note, and the "hubble-bubble" note also; and as the plumages of the two sexes are so very similar, I do not understand how any person can tell whether it is the cock or hen bird that makes this peculiar noise without shooting one in the act of calling and dissecting it. There is

another loud metallic note quite as difficult to describe as the last, which this bird often utters, and which I have always taken to be the note of the female, for the simple reason that it is almost exactly like the note of the female Koel or Indian Black Cuckoo (*Eudynamys honorata*), but I have had no means of proving it. Now, whilst on the subject of Cuckoos, I may as well relate a little episode that occurred here this year. The day after my arrival at Brettenham, I noticed a pair of Cuckoos flying about the garden, calling and settling on an old dead tree in front of my window; this was on April 4th. How long they had been in the neighbourhood I do not know, but they were certainly there on that date; and I mention this as there has been much discussion lately upon the subject of the early dates of arrival of this species. I kept my eye on these birds for some weeks, searching for their eggs, and on June 9th found one in a Pied Wagtail's nest, strange to say, within a foot of my egg-cabinet! The nest, which was about 3 ft. from the ground, was built in the ivy running up the outside wall of my sitting-room, the cabinet being on the inside, and the nest on the outside of the wall. Feeling sure that the eggs must have been intended for my collection, I took the whole clutch to prevent disappointment, consisting of five Wagtail's eggs and one Cuckoo's, the latter being of the Wagtail type, and closely resembling those eggs. Not wishing, however, to destroy the Wagtail's nest, which was the second nest it had built in the same piece of ivy, the first brood having hatched off safely, I put five Spotted Flycatcher's eggs into the nest, and in a short time these were hatched off and reared, and the young birds are now flying about upon my lawn, and able to take care of themselves. The Wagtails were probably astonished that they did not run about the lawn after they left the nest, according to the habits of their species; but they continued to feed them nevertheless until they were full grown. It is very difficult to ascertain how many eggs the Cuckoo lays, as they are so difficult to find; but I feel sure they lay very few,—probably not more than four or five, if as many,—for so few young birds are to be seen after they are hatched. This year I only saw one young bird that undoubtedly belonged to these same Cuckoos, and that was reared by another pair of Wagtails in my kitchen garden. Had there been others about I must have noticed them. Possibly one or two eggs may have got destroyed, but probably not, for I examined innumerable nests that had not been disturbed in the same locality without finding one. As regards the size of the egg, it is no doubt a provision of nature that it should be small, for two reasons—first, in order that it may correspond fairly in size with the eggs of the bird in whose nest it is placed; and secondly, in order that the bird may be able to carry it in its mouth, which it could not do if it was larger, and which I believe it almost invariably does previous to depositing it in the nest of the foster-parents. In some cases, of course, a Cuckoo may lay her egg in a nest in the usual way,

but in most cases that have come under my notice the nest has been either so small, or so situated, that the Cuckoo could only have deposited the egg in it with her beak.—E. A. BUTLER (Brettenham Park, Bildeston, Suffolk).

I have several times heard and seen the Cuckoo calling on the wing, but always at a period of high domestic excitement. I have seen two Cuckoos chasing one another, both calling, and uttering their other peculiar June notes. This is a great district for Cuckoos.—H. CHICHESTER HART (Carrablagh, Lough Swilly, Co. Donegal).

[This observation is confirmed by several other correspondents.—ED.]

Young Cuckoo reared in a Swallow's Nest.—Here at Harswell Rectory, in the East Riding of Yorkshire, a Cuckoo has been hatched and reared in a Swallow's nest, in the verandah attached to my house. The young bird has flown, and as I write is sitting on the wire fence in front of the house, and is still being fed by its foster-parents, who catch flies and supply its wants. Is not this an unusual incident, and is there any precedent for Cuckoos depositing their eggs in Swallows' nests? A few days ago I saw a white Swallow at Harswell.—E. W. ATKINSON.

[The Swallow is included in a list of birds in whose nests the egg of the Cuckoo has been found, given by Professor Newton in the fourth edition of Yarrell's 'British Birds,' vol. ii. p. 394, note, but such an occurrence is exceptional. In 'The Ibis' for October, 1892 (p. 524), the Rev. C. Wolley Dod mentions a case of the kind which occurred at his residence, Edge Hall, near Malpas. The Swallow's nest was built on a ledge in a gardener's "potting shed" formed against a garden wall, with a lean-to roof, and an opening in front fifteen feet long by six feet in height. The nest was so situated that the Cuckoo's egg could only have been introduced by means of the Cuckoo's beak. The egg was duly hatched, and the young bird reared, and as soon as it could fly took its departure.—ED.]

Green Woodpecker pursued by a Sparrowhawk.—Although not of common occurrence, yet in the New Forest I have, on two occasions at least, seen a similar chase to that already reported (p. 58), but in neither case was the hawk successful in securing her quarry. Had it been otherwise, I should imagine, the strong beak and claws of the Woodpecker would have proved formidable weapons against even the Sparrowhawk's dexterity and power. In one of the instances referred to I was both interested and amused. It was, I think, in July, some years ago, I had been insect collecting in the forest, and about mid-day sat down under a large tree in a comparatively open space in the wood to refresh the "inner man," as well as to watch the wild life in such a charming spot. Whilst seated there, I saw a Green Woodpecker come from a distant tree, and like a flash of undulating yellow light, make towards a trunk at no great distance from the one that offered me shelter. But suddenly it began to scream in a most terrified manner,

and I observed a female Sparrowhawk dashing after it in close pursuit; the Woodpecker went "plump" upon the tree to which it was hastening, about six or seven feet from the ground, and the Sparrowhawk did likewise, but with very different result, for it fell trembling to the foot of the tree, slightly stunned, I suppose, by the sudden stoppage. I sprang up and ran towards it, but in the meantime it had recovered itself sufficiently to prevent my capturing it. The Woodpecker had quietly disappeared, I know not where, and the whole transaction, from start to finish, occupied far less time than my description of it.—G. B. CORBIN (Ringwood, Hants).

Period of Incubation of the Sparrowhawk.—As I do not find any information on this point in the various bird-books which I have consulted, an observation on the subject may be acceptable. A gamekeeper assured me last spring that the Sparrowhawk sits five weeks. As I thought he had probably overstated the time, I purposely kept a nest under observation. Five eggs were hatched, and the period of incubation proved to be from thirty-seven to thirty-eight days. — J. H. SALTER (University College, Aberystwith).

Montagu's Harrier in Hants.—Notwithstanding the almost universal war which is waged against all the Hawk tribe, it is gratifying year after year to be able to note their continued existence in our midst. During the past summer I have known of two, if not three, pairs of Montagu's Harrier nesting in the valley of the Avon. One pair brought off a brood of three, which were seen from time to time frequenting the place of their birth—a low, somewhat damp, situation covered with coarse grass and other herbage, amongst which *Osmunda regalis* grew tallest, with here and there a few scattered birches of a stunted growth, the whole situation being overhung by a noble oak-wood crowning the distant hill. That these birds, old and young, should have escaped the vigilant eyes—or rather gun—of the gamekeeper is a mystery I cannot explain, except that the spot chosen by the Harriers was some considerable distance from the dry situation where the coops for rearing his "birds" were placed. Another pair of the same species frequented a situation a few miles further down the valley, but I am sorry to add both were killed, the male on June 4th, and the female ten days later. From the denuded under-parts, the latter showed unmistakable signs of nidification, and the keeper who killed the bird said he believed she had young somewhere on the extensive heaths to the west of the river, as she and her mate always came from that direction. It is somewhat remarkable that three or four days after he had shot the male he observed another "blue hawk" in company with the female, and even after she was slain still a pair of old birds was left, so there must have been two pairs in the vicinity, for the young, if hatched, were certainly not in the plumage described. It is interesting to note the nature of the food of this species

at that particular season. On dissection, I found that the stomach of the male contained the remains—particularly the legs—of a Yellow Bunting, together with the *eggs* of that bird, and a small mass resembling fragments of insects, amongst which the wing-cases of a small beetle were conspicuous; this latter probably from the stomach of the Bunting. The food of the female was even more varied, and her appetite apparently more vigorous; for the stomach contained no less than six legs of small birds (*viz.* two of Bunting and four of Meadow Pipit), the tail and legs of a sand lizard, and a considerable mass of broken eggs, amongst which those of the Sky Lark were easily recognised; in fact, I should suppose the Harrier was killed in the act of robbing the Sky Lark's nest, as an almost entire egg of that bird was in its throat, and the whole passage into the intestines seemed gorged with similar food, whilst the action of the gizzard upon the egg-shells of Sky Lark, Bunting, &c., had reduced them to an almost unrecognizable mass; indeed it seemed impossible that the body of a bird the size of a Harrier could have enclosed such a quantity of food. From the foregoing facts it seems that small birds and their eggs form the staple article of food at this season, although the gamekeeper assured me that the hen bird especially had been "working" his breeding-coops; but I suppose anything bearing the name or semblance of a "hawk" has a like reputation from the gamekeeping fraternity, as it is a well-known fact that even the "Night Hawk," as the Nightjar is often designated, is by ignorant people persecuted as an enemy to their craft. My experience goes to prove that Montagu's Harrier is the commonest species of its class met with here; and although last year I heard of three pairs of Marsh Harriers nesting in the forest, I am doubtful as to identity of the species. In this district I have seen but one specimen of the Marsh Harrier in the flesh, many years ago, and, if my memory serves me, that was in late autumn or early winter, and in that case a doubt existed in my mind as to its being a Hampshire specimen at all. Of course the fact of my not having seen the species myself is no proof against its occurrence. Two years ago a specimen of the Marsh Harrier, said to have been killed in this locality, was identified by a person who possesses Yarrell's 'British Birds.' When I saw the specimen, however, a short time afterwards, a glance proved it to be an immature male of Montagu's Harrier.—G. B. CORBIN (Ringwood).

Buzzard in Derbyshire.—Early in July last a Buzzard (*Buteo vulgaris*) was shot by a gamekeeper about two miles south of Bakewell, Derbyshire. One foot had at some previous time been taken off at the ankle-joint, and two claws were missing from the remaining foot. In the crop was found the remains of a Stoat.—W. STORRS FOX (St. Anselms, Bakewell).

[It is to be hoped that this will prove a lesson to the keeper, who should regard the Buzzard as a friend rather than an enemy. It is true that this bird takes toll of the rabbits when it has the chance, but when these are

plentiful, what matter? It also destroys numbers of moles, mice, voles, and rats, and on this account should be especially protected by the farmers. The habit of the Buzzard is to sit upon some horizontal limb of a tree watching for prey. Its quick eye detects the slightest movement of any small animal beneath it, and as soon as the latter is fairly visible, the bird glides off its perch and drops quickly upon it.—ED.]

Habits of the Herring Gull.—It may interest your correspondent, Mr. W. W. Flemyng, to know that I can confirm his observation (p. 308). I also have found candle-ends on the Sovereign Rocks, near Kinsale, which had evidently been swallowed by the Herring Gulls nesting there, and been cast up by them. No doubt Mr. Delap's explanation is the correct one.—H. L. POPHAM (21, Ryder Street, St. James's).

Nesting of the Dotterel in Lakeland.—During a recent visit to the Lake District, I made inquiries about the Dotterel, *Eudromias morinellus*. Shepherds and anglers could mention former haunts, and tell of the value set upon this bird by makers of trout-flies; but the impression seemed to be that few or none remain to breed at the present day. After some search I met with a solitary bird of this species, on July 19th, upon the bare summit of one of the mountains, at a height of about 2740 ft. above sea-level. It rose with a weak note, somewhat like that of the Ringed Plover, *Ægialitis hiaticula*. I found its mate near the same spot, which they were unwilling to leave, one or other of the birds being almost always in sight. The ground was covered with sub-alpine mosses, dark in colour, and woolly in texture, with here and there a patch of reddish shade. The hen bird, which seemed most interested in my movements, watched me from a distance of about twenty paces, or took rapid runs of a few yards, stopping now and then to pick up some insect or other food. When running, the neck was drawn in, and head not higher than its shoulders. It was perfectly silent, and harmonised well in colour with the stones. I noticed an occasional jerking movement of the head, which may have given rise to the old idea of the Dotterel imitating the movements of the fowler. After watching for half an hour, in a bitterly cold wind, I formed some idea of the whereabouts of the nest. As I drew nearer, the bird shuffled along the ground, squeaking like a rabbit; her white-tipped tail was spread to a perfect fan, wings a little raised, and shivering. It was not until I had watched for some time longer that I at length found two eggs in a slight hollow in the moss. There was no nesting material of any kind. Next day, on visiting the place, I found the bird sitting. After watching her from a distance of four paces, I slowly lessened the distance, and finally stooped and touched her before she slipped off the nest. I thought this tameness of the sitting bird the more noteworthy, as the eggs were not more than half incubated. I came across a second

pair on a neighbouring summit, but could see little of them owing to the thick mist which prevailed. Both birds were much excited; they shammed lameness, sometimes springing a few feet into the air, and fluttering down again, as well as going through a performance similar to that above described. They doubtless had young, and must have led them away shortly afterwards, for on two subsequent occasions I could find no trace of either old or young. I looked over much suitable ground in other directions, including spots which were formerly favourite haunts, but could see nothing more of this most interesting species. — J. H. SALTER (University College, Aberystwith).

Dotterel in Derbyshire.—On May 27th last four Dotterel (*Eudromias morinellus*) were shot by a gamekeeper on the high bleak pasture-land about three miles due west of Bakewell, Derbyshire. The wings were saved for fly-dressing, and the bodies were eaten! — W. STORRS FOX (St. Anselms, Bakewell).

[The destruction of these birds on the eve of visiting their breeding haunts is most reprehensible, and the offender should have been certainly prosecuted under the Wild Birds Protection Act, 1880, for they were killed during the close-time between March 1st and August 1st.—ED.]

Late Nesting of the Goldfinch.—I found a Goldfinch (*Carduelis elegans*) sitting upon five fresh eggs in a nest in an apple-tree in my garden on August 24th. Surely this is unusually late in the season for these birds to be breeding?—E. A. BUTLER (Brettenham Park, Bildeston, Suffolk).

[No doubt a second brood.—ED.]

Greater Spotted Woodpecker nesting in Scotland.—In the July number of the 'Annals of Scottish Natural History,' Dr. Stuart asks for information about the Greater Spotted Woodpecker nesting in Scotland. Though, of course, a comparatively rare bird in the north of England, this Woodpecker has nested for many years in the border counties, and occasionally over the border. In 1888 a pair of Greater Spotted Woodpeckers nested at Canonbie, N.B., but they and their eggs were taken by a gamekeeper. As birds do not observe political boundaries, it is probable that the species often strays into Southern Scotland to breed. I had two fine nestlings of *Dendrocopus major* brought to me this year on July 10th, taken from a nest distant about fifteen miles south of the Scottish border. One of them soon died, owing, I fancy, to its having been savagely attacked by one of my Lesser Spotted Woodpeckers. The other flourishes, and will make a great pet, but the species is not so lively as the Lesser Spotted one. The latter are extremely animated, and chip away at the bark nearly all day long.—H. A. MACPHERSON (Carlisle).

Hooded Crow breeding in Warwickshire.—It may be of interest to state that about the year 1887 I found *Corvus cornix* breeding at Sutton

Coldfield, in Warwickshire. The nest was placed in a tall and solitary tree. I happened to mention the fact to a local collector, and he had the nest and eggs taken for his collection. — F. COBURN (Holloway Head, Birmingham).

Mealy Redpoll in Worcestershire.—On the 25th January last an adult male Mealy Redpoll (*Acanthis linaria*) was caught at Selly Oak, Worcestershire, and brought to me. It is the first which has passed through my hands, and is new to my local list. — F. COBURN (Holloway Head, Birmingham).

Unusual Number of Eggs for the Marsh Tit and Willow Wren.—During the past nesting season I found a Marsh Tit (*Parus palustris*) sitting upon eleven eggs, and a Willow Wren (*Phylloscopus trochilus*) upon twelve. In each case I imagine that from six to eight eggs is the usual number.—J. H. SALTER (University College, Aberystwith).

Lesser Grey Shrike in Hampshire.—I lately had the privilege of visiting the collection of stuffed birds at Heron Court, in company with Mr. Edward Hart, of Christchurch. The collection was formed by the late Earl of Malmesbury, and all the birds were secured on this interesting and beautiful estate. The first "British" specimen of White's Thrush is still in very good condition, and is mounted with one wing raised, exactly as it is represented in the well-known engraving in Yarrell's 'British Birds.' The first recorded "Sabine's Snipe," also, is in equally good condition. In the collection there are a great number of rarities, when one considers that it was formed entirely from one estate, but then the situation of the property is most advantageous, being close to the coast, having a fine stream, the Avon, running through it, and possessing a great stretch of heathy ground, in which are swamps and quiet pools, as well as numerous coverts, and woods of Scotch fir. Birds, in consequence, representing all families, occur, so that in the collection are Ospreys, White-tailed Eagles, Harriers, Bee-eaters, rare *Anatidæ*, Waders, Skuas, &c. We saw a Squacco and a Little Bittern that had been shot together at one bend of the river. Among the cases my attention was arrested by one containing a Shrike, labelled "Grey Shrike, shot Sept. 1842." This proved, on inspection, to be a good specimen of an adult *Lanius minor*. I had believed that one in my own collection, obtained some years ago at Great Yarmouth, was the only adult male of this species that had been met with in the British Islands, but this example at Heron Court had been there long before. We saw a case containing a fine pair of Great Black Woodpeckers, and were told that they were foreigners, but that they replaced a pair, falling to pieces, that had been shot many years ago in trees in the park.—MURRAY A. MATHEW (Buckland Dinham, Frome).

Avocet in Sussex.—On July 1st, while at Pett Level, near Hastings, I had offered to me, a few minutes after it was shot, an adult female Avocet (*Recurvirostra avocetta*). Mr. Bristow, of St. Leonards, to whom I took it for preservation, gave me the following particulars:—Weight, $9\frac{1}{2}$ ozs.; plumage good, but rather bare at the breast, as the bird had evidently been sitting. In its gizzard were about twenty small worms. Mr. Borrer, in his ‘Birds of Sussex,’ gives, I think, 1870 as the date of the last one recorded to have been met with in the country, but Mr. Bristow tells me he had two others from the neighbourhood of Camber Sands some six or seven years ago. I found on questioning the man who shot the one I purchased that there were two together, and that he wounded the second one, but it got away. Two days after one was sent to Mr. Bristow from near the same place, and he found on skinning it that it had been wounded before. I have no doubt therefore that it was the same bird. It was also a female, but weighed an ounce heavier than the one first obtained, and stood higher on its legs.—GEORGE W. BRADSHAW (Hastings).

[It is much to be regretted that public opinion or private enterprise is not strong enough to put a stop to the repeated infringement of the Wild Birds Protection Act, which is brought to our notice by correspondents in various parts of the country. It would give very little trouble to apply for a summons, and the offender on conviction would have to pay the costs.—ED.]

Crossbills in Somersetshire.—A flock of from fifteen to twenty Crossbills appeared on the Scotch firs in our avenue on August 25th, and their peculiar twitter first attracted my attention. A farmer complains that great damage has been done in his orchard to some early apples by birds “that cut them open, and then leave them”; so the Crossbills have evidently been about here for some little time. I have heard of others having been noticed at Newgale, in North Pembrokeshire, in the last week of June. — MURRAY A. MATHEW (Buckland Dinham, Frome).

INSECTS.

Tamed Butterflies.—The late Mr. J. Price, M.A., of St. John’s College, Cambridge, penned a note on this subject which appears in the last published part of the ‘Proceedings’ of the Chester Society of Natural Science (No. 4, p. 209). It is as follows:—“The young Thomases, of Llandudno (whom I commended to you long ago as promising observers), have succeeded in taming certain species of Butterfly, not the Common White, which is too shy. They began by offering *cautiously* a sugared finger, on which the insect perched and fed, returning when shaken off, and finally following their friends up and down the garden, and alighting on them fearlessly.”

NOTICES OF NEW BOOKS.

The Badminton Library. Big-game Shooting. By various contributors, edited by C. PHILLIPPS-WOLLEY. With numerous Illustrations by J. WOLF, C. WHYMPER and others. 2 vols. 8vo. London : Longmans, Green & Co. 1894.

VIEWED as a series of narratives by individual sportsmen in different parts of the world, recounting merely their own experience, these volumes are pleasant reading enough ; but there is no disguising the fact that they are not well edited. Apart from the fact that the Editor's own experience as a big-game hunter has been limited, even on the continent, with which he professes to be most familiar (N. America), he seems to have made no attempt to harmonise the work of his contributors, to reconcile conflicting statements, to delete repetitions, or to supply information on points which they have overlooked. This is to be regretted, for the subject is a splendid one, and if properly handled, would have resulted in the production of the best of all the volumes on sport in this now celebrated series. And it is the greater pity because with contributors of such wide experience as the late Sir Samuel Baker, F. C. Selous, F. J. Jackson, W. A. Baillie Grohman, Abel Chapman, Heber Percy, St. George Littledale, and others whose names are mentioned, a supply of the best material was, so to say, guaranteed ; all that was needed was to mould it into proper shape. It is an ungracious task, however, to point out shortcomings, and we prefer to confine our remarks to an indication of the varied contents of the two volumes in the order in which they are presented to the reader.

The first volume, which deals with Africa and North and South America, opens appropriately with a chapter on African hunting as it was fifty years ago, written by the late W. C. Oswald, whose name with big-game hunters is a household word, and most fortunate was it for posterity that before his death (which occurred only in May of last year) he was prevailed upon to write these experiences. A sympathetic memoir of him by Sir Samuel Baker (who was so soon to follow him) paves the way

for some reminiscences of that equally renowned hunter. Oswell's account of his second and later visits to Africa, and of his sojourn



BIG GAME ON THE SIRINGETI PLAINS.

with Livingstone in the Zambesi country, is full of interest for naturalists as well as sportsmen. But on getting to the end of

this section, which ends on page 153, we seem to have been reading ancient history, for Oswell's career takes us back fifty years to the days of muzzle-loaders, and we miss here the want of a chapter on *modern* South African hunting such as Mr. Selous could have admirably supplied. This, however, we do not get, for the next page carries us into East Africa under the guidance of Mr. F. J. Jackson. A better guide under the circumstances one could hardly desire, but having read what he has to tell us, we cannot help feeling that the enjoyment of a hunter's life such as he depicts is only to be realized by a very few, namely, by those to whom money is no object, and who can afford to carry with them into African deserts no small share of the comforts of civilization. It seems to us that he recommends the transport of too large a "battery," and too many luxuries. Two good rifles and a shot gun ought to suffice for any man. To carry more, means an additional quantity of different sized cartridges, and additional weight, for which bearers must be provided. Moreover, we have it on the best authority that it is far better to get accustomed to one good rifle, upon which you can depend in case of emergency, than to be constantly changing from a large bore to a small bore, from a light weight to a heavy weight, and *vice versâ*. Again, the sportsman who is roughing it in East Africa may surely dispense with a bedstead, a bath, and a bath-tent, and be content with a mattress upon the ground, and a bucket of water.

But our concern is not so much with the sportsman's outfit and stores, as with the natural history of the country explored, and the haunts and habits of the animals hunted.

From the naturalist's point of view, the chapter on Antelopes deals too briefly with the different species, many of which are still very imperfectly known, and concerning which one would like to have more information from a writer who has seen and stalked them in their natural haunts.

The South African Lion has a chapter to himself, by Mr. Selous, and a very good chapter too; but the South African Antelopes, strange to say, are passed over in silence. Perhaps the Editor considered that having given Mr. Jackson's list of the East African species, it would be superfluous to say more about them. But there are species in East Africa which are unknown in the south and *vice versâ*, and the *present* distribution

of big-game in the south is a subject upon which one naturally expects to find information, for Oswell's experiences, related in the earlier part of the volume, refer altogether to bygone times.



SOUTH AFRICAN ANTELOPES.

We come then to an account of the game of North America, in which the Editor himself is the narrator. It is to be regretted

that this section was not entrusted to someone with a wider knowledge of the hunting-grounds of America, and greater experience as a hunter, for Mr. Wolley shows almost on every page that he is not equal to the task which he has set himself. Not only does he omit mention of some of the finest hunting-grounds of the west, but his experience as a hunter has, on his own showing, been of such a limited character, as to deprive the reader of much confidence in his advice. Nor are his observations on the natural history of the animals hunted so accurate as they might have been, some of his remarks on the habits and food of certain species (the Moose and Cariboo, for example) being directly at variance with those of more experienced hunters. The five pages devoted to the Bison are quite inadequate to do justice to it, and some of the statistics given stand in need of correction. Altogether this is a most disappointing chapter. The big-game of America deserved fully as many pages as the big-game of Africa, but while 320 are allotted to the latter, 80 pages only are devoted to the former.

The account which follows of the big-game of Central and South America (extending to less than three pages!) is simply contemptible. Anyone having knowledge of the literature relating to these countries would have been able to supply a better account than this, without having ever visited the country! It is to be regretted that this chapter was not undertaken by Admiral Kennedy, whose 'Sporting Sketches in South America' were noticed sometime since in this Journal.*

The first volume of the work before us concludes with a chapter on the Musk Ox by Mr. Warburton Pike. So far as his experience has extended, his report is valuable; but it is merely a personal narrative of an expedition from Fort Resolution on the southern shore of the great Slave Lake, and does not supply what was needed in a work of the kind before us. By the way, Mr. Pike tells us that he can find no record of the Musk Ox having been seen in Greenland. If he were a reader of 'The Zoologist,' he would have remembered the information on this point afforded by Colonel Feilden.† The southern range of the Musk Ox is now satisfactorily established as far south on

* 'Zoologist,' 1893, p. 114.

† 'Zoologist,' 1890, p. 178; and 1893, p. 42.

the east coast of Greenland as midway between the parallels of 70° and 71°, and will in all probability be found to extend along the coast line of Egede Land to the 65th parallel of latitude.

Turning to the second volume of 'Big-game,' we find the contents to be of a very varied and interesting nature. Mr. Arnold Pike, writing on "Arctic Hunting," describes the chase of the Walrus and the Polar Bear. Mr. Wolley deals with the Caucasus, and his chapter is supplemented by Mr. St. George Littledale with an account of the so-called Caucasian Aurochs, although that name is wrongly applied to the European Bison.

In the two succeeding chapters Mr. Baillie Grohman gives his experiences in pursuit of the Chamois and the Stag of the Alps, and shows himself perfectly familiar with the habits of these animals, and with the wild mountainous country which they frequent. He gives also some curious statistics from old German game books relating to the size and weight of stags, and the number of tines they carried in former days, as compared with the degenerate animals which are now obtained by sportsmen.

Sir Henry Pottinger, dealing with the European Elk, describes the chase of this huge beast in Scandinavia, and Major A. Heber Percy writes on Bear-hunting in Russian Lapland. This is supplemented by a chapter on Bear-driving in Russia by Lord Kilmorey, and is followed by an account of Bison-shooting in Lithuania. This animal being less known to sportsmen than any other of the European big game, Major Percy's description of its appearance and size, as compared with the Bison of America, is valuable. Referring to a fine bull which he shot as it was driven with a small herd past his hiding-place, he says:—

"He was much larger than any American Bison I have shot or seen; his hair was finer, longer, and not so curly; his colour was a shade lighter, and his horns do not curve at the same angle as those of *Bos americanus*. His height at the shoulder was about six feet, but he gave me the idea of being a leggier beast than the Bison of America. I saw no difference between them which could not be accounted for by climate and habitat."

Messrs. Abel Chapman and W. J. Buck, whose recently published work, 'Wild Spain,' was noticed in this Journal not long since,* supply a short chapter on the large game of Spain and Portugal, amongst which they include the Red, Roe and Fallow Deer, Chamois, Ibex, Bear, Wolf, Fox, Lynx, and Wild Boar. Of these the greatest prize is the Ibex, not only for the sake of the



BISON HEADS FROM LITHUANIA.

splendid horns he carries, but also on account of the extreme difficulty of stalking and shooting him. The late Sir Victor Brooke wrote of the Pyrenean Ibex:—"They live in the worst precipices I ever saw an animal in, and go into far worse ground than the Chamois. They are very nocturnal, and are never seen except in the dark, or early dawn, unless disturbed."

We next come to the section on Indian Shooting, by Lieut.-Col. R. Heber Percy, and this occupies the greater portion of the

* 'Zoologist,' 1893, p. 317.

second volume. The writer shows himself perfectly familiar with his subject, and his contribution is one of the best in the book. Want of space precludes our following him through the long, varied game list of India; suffice it to say that he has much good advice to give, and his tables of measurements will be found most useful to those in search of standards by which to judge their own trophies.

Perhaps the most coveted of all heads is that of the great Wild Sheep of the Pamir which has been named in honour of Marco Polo, and Mr. St. George Littledale's account of his adventures in search of this grand beast, and of the success which he met with in pursuing it, will be read with lively interest by naturalists as well as sportsmen.

The volume concludes with some useful hints on camps and transport, on the choice of rifles and ammunition, and on the best method of preserving trophies.

In regard to illustrations, both volumes are well supplied with process blocks from drawings by Messrs. Wolf, C. Whymper, and H. Willink, as well as from photographs; and although the particular process employed does not always do justice to the delicacy of the original sketches, many of the finer lines being sometimes effaced, on the whole they must be regarded as artistically drawn, and, with few exceptions, much more accurate than many we are accustomed to see. It is satisfactory to note that not one of them has been borrowed from any previous publication—they have all been expressly designed for the present work; and we are indebted to the publishers for permission to reproduce a few, that our readers may judge whether we have unduly praised them.

Game Birds and Shooting Sketches: Illustrating the Habits, mode of Capture, stages of Plumage, and the Hybrids and Varieties which occur amongst them. By JOHN GUILLE MILLAIS. Second Edition. 4to. Pp. i-xiii, 1-185. With numerous Illustrations. London: Sotheran & Co. 1894.

THE author of this capital book has conferred a boon upon naturalists and sportsmen by publishing his second edition upon

smaller paper. The size, weight, and cost of the first edition placed it far beyond the reach of many who would like to possess it, if they could afford it; and the handier form in which it is now issued will admit of its being placed side by side with other works upon kindred subjects on the ornithologist's bookshelves.

To avoid misconception, it may be stated for the benefit of those who have not yet seen it, that this volume relates exclusively to the Grouse family, and being illustrated by the author, who is fortunately an artist as well as a sportsman, the subject is most graphically treated. There are eighteen full-page plates, and no less than thirty-seven text cuts, representing Capercaillie, Blackgame, Grouse, and Ptarmigan, with their natural surroundings, besides many varieties and hybrids, some of which are extremely curious.

Mr. John Millais is one of those enthusiastic gunners who goes out not merely to shoot, but to observe. He takes his sketch-book as well as his cartridge-bag, and utilises the long watches between the grouse-drives or roe-deer-drives, as the case may be, by committing to paper some of the charming incidents afforded by a day in the forest or on the moor. His pictures of "Grouse resting" and "Grouse disturbed," "Blackgame amongst the firs and larches," and "Blackgame Tournament," are absolutely true to nature, while the accompanying descriptions show how closely he has studied the habits and attitudes of his feathered friends.

Here is an observation on Capercaillie:—

"On one occasion, at Murthly, I remember, when I was out by myself, and the keepers beating some woods near the castle for an old Roebuck which had escaped for several years, that I arrived at a small pass at which I was to stand, whilst the men worked up in my direction. Then I noticed the branches of a large Scotch fir, within a few yards of the place where I was standing, swaying about in an agitated manner. Thinking at first it was only a party of Squirrels, which literally swarmed in the woods, I took no notice of it until at length I saw the head of a bird I knew well, quietly nipping off the young shoots at the ends of the branches. Putting down my gun, and forgetting all about the Roebuck, I got into such a position that my friend was out of sight behind the trunk of the tree, and crawled on

my hands and knees to the foot of the tree. My journey was but half completed when I discovered, by the flapping of a wily old cock as he made off, that the one I had seen was not the only occupant, for, on peering cautiously round the stem, there to my delight were no less than five others all busily engaged on their evening meal. It was ten minutes before the keepers came up, and in that time I think I learnt



HEN CAPERCAILLIE ASSUMING MALE PLUMAGE.

more about the positions and attitudes of Capercaillie than I have ever done since. Though they never once thought of looking down at me, it was very interesting to notice the simultaneous manner in which they all stopped feeding on the first warning crack of the beater's stick."

Some excellent figures are given of hybrids, amongst others of Capercaillie and Blackgame (p. 17), Capercaillie and Pheasant (p. 31), Blackgame and Pheasant (p. 64), and Blackgame and Grouse (p. 68). One of the most interesting is the supposed hybrid

between Ptarmigan and Grouse (p.183). Of this bird Mr. Millais writes :—

“ One would imagine that from the close association and similarity of structure of the two species, Grouse and Ptarmigan would frequently be found breeding together ; but such is far from being the case. There is no perfectly authenticated instance of such a hybrid, and I have only



SUPPOSED HYBRID BETWEEN PTARMIGAN AND GROUSE.

given the illustration of this supposed cross because it is believed to be such by more than one eminent ornithologist. This bird possesses all the points that such a hybrid should have, the head and neck closely resembling the head of an autumn hen Ptarmigan, and the tail and tail-coverts being also alike, so that the bird is as likely as not to be a genuine hybrid of the two species. It was shot on the 1st Sept. 1878, by Mr. W. Houston, a well-known veteran Highland sportsman. He killed it on the Ptarmigan ground above his house at Kintradwell, Brora, Sutherland, as it was flying with a covey of Grouse. After-

wards he sent it to Professor Newton, of Cambridge, who placed it in the museum of that town."

The claims upon our space preclude our making further extracts, and it must suffice for us, on closing the volume, to recommend it cordially to the perusal of our readers.

We are indebted to the publishers, Messrs. Sotheran & Co., for the loan of the two illustrations which accompany these remarks.

The Grouse. Natural History by the Rev. H. A. MACPHERSON; Shooting by A. J. STUART WORTLEY; Cookery by GEORGE SAINTSBURY. 8vo, pp. 293. With Illustrations. London: Longmans, Green & Co. 1894.

Most opportunely, like the work last mentioned, this book makes its appearance at the commencement of the Grouse shooting season. It forms the second volume of the 'Fur and Feather' series published by Messrs. Longmans, the first volume of which (on the Partridge) was noticed in our number for May last.

Mr. Macpherson, dealing with the natural history of the bird, offers some preliminary remarks on the etymology of the name "Grouse." In so doing, he follows Prof. Newton ('Dict. Birds') in tracing the word to "an old French adjective *griesche*, signifying grey, or speckled." It seems rather straining a point to write "or speckled"; for while "speckled" well describes the plumage of the Grouse, and "grey" does not, the strict meaning of *griesche* is surely grey. We have the modern form of it (*grièche*) in the French name for the Grey Shrike, *Pie grièche*, which, by the way, neither of the above-named writers has noticed; but to say that "the plural word *grice* was early modified into the singular *grows*" is to assume that *grice* was a plural substantive instead of an adjective, and is scarcely supported by the quotation from Cotgrave (1611), whose meaning we take to be that "*poule griesche* [was] a moore-henne; the hen of the *grice* [game] or moore game"; in other words, that Cotgrave employed the word *grice* as an adjective, and not as a substantive, as Mr. Macpherson assumes. There is yet another explanation,

or rather suggestion, which we will venture to make, and it is this. Eighty years at least before Cotgrave published his 'Dictionarie of the French and English Tongues,' the word *grows* was in use, and was applied in the first instance, as Prof. Newton has hinted (*op. cit.*), to the "black game." These birds from their colour and their haunts may well have been called *moor-crows* by the uninformed, and it is easy to see how, on dropping the prefix, "crows" became "grows" in the pronunciation of the vulgar. Whether there is any evidence of this use of the word *moor-crow*, we are not at the present moment of writing prepared to say;* but we should not be surprised to find it in the works of Hector Boece or Bishop Leslie, or their translators, or perhaps in Holinshed, who embodied so much of Boece in his 'Chronicle.' But we must not pursue this subject further, interesting enough though it be, or we shall have no room for further criticism of the book before us.

In the natural history of the Grouse, Mr. Macpherson has found a delightful theme on which to exercise his pen, and being himself a moor owner in Skye, with a knowledge of other moors in the north, he has turned his opportunities to good account in an essay of some seventy odd pages. As there is unfortunately no index to this volume, it would have been a good plan if, instead of the running headline "Manners of the Grouse," Mr. Macpherson had substituted at the top of every right-hand page the key-words indicating the contents of each page. Thus we should have (from page 7 onwards) "Distribution," "Introduction into Shetland," "Exportation," "Time of Laying," "Nest and Eggs," "Food," "Tame Grouse," "Perching in Trees," "Pugnacity," "Preponderance of Males," "Packing," "Separation of the Sexes," "Long Flights," "Heather Burning," "Enemies of Grouse," "Vermin," "Plumage," "Hybrids," "Weight," "Poaching," and "Netting." These headings furnish a good indication of the variety of subjects which are dealt with in connection with Grouse; but the remarks on heather-burning are much too brief, and we are surprised to find no allusion made to the very important matter of Grouse-disease. Nor are these subjects dealt with by Mr. Stuart Wortley in the second part of

* In Cornwall the Black-headed Gull is known as *Mire-crow*, and *Carr-crow* is an old Lincolnshire name for the Black Tern.

the volume which is devoted to "Shooting." A summary of the present views of scientists on the nature and cause of Grouse-disease would have formed a very useful chapter by itself, and we cannot but regard its omission as a serious imperfection in the volume.

Mr. Stuart Wortley, who writes from long and varied experience of Grouse-shooting, describes the different phases of "shooting over dogs," and "driving," with a minuteness of detail which shows him to be a "professor," and his remarks upon the different methods of Scotch and English "driving," illustrated by diagrams, leave nothing to be desired. Like Mr. Millais, he is an artist as well as a sportsman, and his full-page illustrations are excellent accompaniments to the text, as are those, too, of his coadjutor, Mr. Thorburn. Indeed, from the naturalist's point of view, we have seen no better pictures of bird-life for a long time than Mr. Thorburn's "Black Game on the Wall" (p. 262) and his "Ptarmigan amongst the Rocks" (p. 248).

If we were disposed to be critical, we might suggest in regard to the picture "The Shadow of Death" (p. 46) the attitudes of the Ptarmigan are a little faulty, inasmuch as the birds should be crouching with lowered heads as the Eagle passes by, and not sitting with heads erect. The appearance presented by driven Grouse as they approach a shooter is admirably rendered by Mr. Wortley in his picture "The Last before Dark" (p. 216).

In the concluding third part of the volume, Mr. Saintsbury discourses on the most approved methods of dealing with Grouse *after* they have reached the larder, and those who know what it is to dwell for a few weeks on a lone moor, many miles from civilization, when Grouse in some form or other is sure to be served up at every meal, will feel grateful to him for some of his good recipes, although we agree with the writer when he says, "A plainly and perfectly roasted Grouse is so good, that he can in no other way be improved, though of course he may be varied."

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CONTINENTAL OYSTER CULTURE.

BY CAPT. C. C. LONGRIDGE, Assoc. Inst. C. E.

FOR much of the information in these articles I am indebted to Dr. Professor D. Carazzi, Director of the Museum at Spezia; to Mr. J. G. Haggard, Her Majesty's Consul at Trieste; and to Signor R. Allodi, one of the Directors of the Austrian Society for Fisheries and Sea Fishing. The subject is divided synthetically and analytically; in the first articles the various methods of culture are described, in the last certain practical conclusions are deduced. Illustrations of the systems are in the hands of the writer, from whom particulars can be obtained.

I.—ITALIAN OYSTER CULTURE.

A typical instance of the Italian system is found on the Oyster farms of the Mare Piccolo of Taranto. Behind the town and to the east, the sea forms a small bay, and is divided into two basins by the promontory of Penna. This tongue of land leaves an opening of about 500 yards between the basin nearer the town—the inner sea, and that more remote—the outer sea. Neither of these basins is more than two miles wide, and the two together are about five miles long. The north side of the Mare Piccolo receives a few streamlets of fresh water, and the inner sea covers two springs of fresh water, rising a few hundred yards from the shore. The bottom of the Mare Piccolo is a black, soft, odoriferous mud, which, near the town, is polluted with the sewage of 300,000 inhabitants. Fortunately natural conditions

ensure a steady flow of water between the Mare Piccolo and the Mare Grande, and somewhat cleanse this cesspool. Taken at $63\frac{1}{2}^{\circ}$ F., the average density of the water is 1023, rising to 1025 near the railway. The depth of the sea varies from 26 to 39 ft.

Here some thirty-two proprietors possess Oyster farms, varying in size from 2000 to 3000 square yards. The Tarantine Oyster farm (*sciaia*) is formed thus: into the bottom of the sea four or five rows of stout piles, either single stakes (*piombi*) or pairs (*fuerci*), are driven. The stakes are set about 15 ft. apart, and project 3 to 6 ft. above water level. The form of this stake-work or palisade is usually rectangular, 325 by 98 ft., giving a moderate-sized farm. At the ordinary half-tide mark the stakes are bound together with a thick grass rope (*libano*) extending round the whole palisade. Every pair of opposite stakes also is tied together; the parallel ropes so formed are called *ventie*, and these with the *libano* divide up the whole farm into a number of square spaces (*camere*), of which the sides are 15 ft. Lastly, across these spaces, from corner to corner, diagonal ropes (*crociere*) are stretched. The purpose of this network of horizontal ropes will be presently explained.

The method of collecting the young Oysters is a special feature of this system. In the natural course of events the brood, after issuing from the mother, swim freely in the sea for some two or three days. After this period they attach themselves to any solid substance in their way, and develop as Oysters. Failing to meet suitable materials, such as rocks, stones, wood, &c., they sink to the bottom, and, if material for attachment is there not forthcoming, they perish. Artificial collection therefore consists in providing the spat with substances to which they can cling; such substances are called collectors.

The typical Italian collector is a bundle or fascine of dry branches. Chestnut, oak, plane-tree, juniper, furze are used, but the lentisk (*Pistacia lentiscus*) is preferred. During the months of March and April, so as to be ready for the spatting season, the boughs are dried and beaten free of leaves. Then they are tied up in bundles with a piece of grass rope. About one yard of this rope is left free to be used for attaching the bundle to the mooring-rope or *steso*. The fascines are next dipped into a thick solution of lime mixed with a little hydraulic

cement. This not only preserves the wood, but facilitates the adhesion of the spat. After drying, the collectors are ready for use.

The operation of collecting begins with the spatting season, that is, towards the end of April, and lasts during May and June, sometimes longer. Some 2000 to 5000 fascines are used by each proprietor. A *steso* or mooring-rope is taken, and to this 110 to 130 collectors are tied, about 5 ft. apart. Then another *steso* is treated, and so on. Every seventh or eighth collector is weighted by a 16 to 20 lb. mooring-stone. All being now ready, the owner chooses the position for his collectors, and begins to lay them down. At Taranto the Mare Grande is selected, and the collectors are deposited there, some distance from the farms.

When the spatting season draws to a close, the collectors are withdrawn. This takes place generally in July, sometimes in August, and is effected by a boat and grapnel. If the Oysters are found to be few and small, the fascines are replaced. But at the end of August, or at latest half-way through September, the greater number of the collectors are in the farms. As soon as they arrive, they are cast off from the *steso* and made fast to the stake-ropes near the shore. This is a convenient position for the next operation, which is carried out in the following manner. Boys, generally the proprietor's sons, under the direction of an overseer, cut up the fascines on which are the young Oysters. The boughs are divided into sprigs (*zipoli*) about 8 in. long, which are put into baskets and carried back to the stakes. In the meantime a number of pieces of rope 12 to 24 ft. long are cut. One of these pieces is taken by a workman, a knot is tied at one end, and near this end the strands are untwisted. An opening is thus made, and into it one or two sprigs are set; the strands are then released, and the torsion of the rope holds the sprigs tight. Next the strands a little higher up are untwisted, more sprigs are inserted, and so on, until about 18 in. of the rope is left. With this free end the rope and its Oysters is tied on to one of the horizontal ropes (*ventie* or *crociera*) in the *sciaia*, and allowed to hang vertically downwards. Piece after piece of rope is treated thus until the sprigs are exhausted. The horizontal network of ropes attached to the stakes, as already explained, thus becomes laden with vine-like pendants of Oyster-bearing ropes, called *pergolari*. The length of these *pergolari* depends on the

depth of water. Allowing one yard for the dip of the horizontal rope at its centre under the weight of the Oysters, and another yard as the distance the end of the pendant should be from the bottom, the length of rope for 18 ft. of water would be about 12 ft.; for 30 ft. of water about 24 ft., and so on. The *pergolari* are usually set about one yard apart; if closer, the Oysters do not develop so rapidly.

As will be easily understood, many Oysters, during the above operation, become detached from the fascines. Loose Oysters, so detached, are laid side by side, base or joint upwards, in a flat open basket. Over them is scattered a layer of one-year-old Mussels; the basket with its mixed contents is then hung on to the palisade. Eight or nine days suffice for the Mussels to attach themselves to the Oysters and to one another. The baskets are then withdrawn, and handfuls of the united Oysters and Mussels are worked up between the strands of rope, and form mixed *pergolari*. These are first hung horizontally (*a radicola*) by tying the ends to the two opposite ropes of a *camera*. In this way the strands hold tighter, and the shells are less likely to drop. After a few days the Mussels adhere to the rope, and the *pergolari* can then be hung vertically.

As the Oysters grow, overcrowding is avoided by remaking the *pergolari*. This takes place in December. The sprigs with the larger Oysters are collected and remade into separate pendants; those with smaller shells are sorted out and reset; whilst a few Oysters (*a cunichiella*) are formed into a third set of pendants. A *cunichiella* is a name given to such Oysters as have grown opposite each other on the same sprig, and are therefore attached together only by a small portion of wood at the base of the shell. Such pairs are cut off and inserted between the rope strands, and are reckoned to produce the finest class of Oysters. Loose Oysters are treated with Mussels as before. The mixed *pergolari* require a weeding out of the Mussels to give the Oysters greater space for development.

At the beginning of the following summer some of the Oysters are so far grown as to be ready for sale. These are detached, and in numbers of 300 to 400 are placed in the *nassa*, a wicker basket, in which they can be quickly drawn from the water for sale.

By this system of culture a good part of the Oysters can be

sold at fourteen to eighteen months old, and nearly all the rest at eighteen to twenty-four months.

The market classification and prices are as follows:—1st quality, or *grossone*,—these are the Oysters *a cunichiella*, twenty-four months old; price £1 to £2 per 1000. 2nd quality, or *uso Bari*,—these are the best selected out of those eighteen to twenty-four months old; price £1 to £2 per 1000. 3rd quality, or *uso Napoli*,—the ordinary run of Oysters between eighteen to twenty-four months old. Their mean diameter is $2\frac{2}{5}$ to $2\frac{4}{5}$ in., and average weight 88 lbs. per 1000. Price 5s. 6d. to 10s. per 1000. The *uso Napoli* constitute two-thirds of the annual produce. 4th quality, or *sotto Napoli*,—the Oysters rejected from the above classes. Their mean diameter is $1\frac{3}{5}$ to 2 in. Price 4s. 2d. per 1000.

The above are wholesale prices at the farms, and do not include packing or delivery. The mean wholesale price of the bulk of the annual produce may therefore be taken as 7s. 6d. per 1000.

As regards the working costs of the Tarantine system, an estimate is given by Dr. Carazzi in '*Ostricoltura*' (Manueli Hoepli). This estimate is for a moderate-sized farm, say of 3000 square yards. The rent is fixed at £18 per annum. Two hundred and sixty stakes, costing 4s. 2d. to 8s. 4d. each, are reckoned at an average price of 6s. 3d., or in round numbers £80. Three rough flat-bottomed boats cost another £24. Stakes and boats together therefore cost £104. Calculating interest at three per cent., and total depreciation in ten years, the capital sunk in stakes and boats is represented by 13 guineas per annum. Probably 30 stakes a year will have to be replaced at a cost of another £10; the boats also will require overhauling—say a further £4 per annum. The total annual expenditure for stakes and boats therefore is about £28. Grass rope, 15,000 lbs., may cost another £32 per annum; and 2000 fascines as collectors at $2\frac{1}{2}$ d. each, another £20; whilst for baskets £2 may be allowed. For labour, six men are reckoned at 10s. per week, or $6 \times 10s. \times 52 = £156$ per annum; adding something for boys, the total labour may be estimated at £160 per annum.

The average yield of such a property is 750,000 Oysters per annum. These sold at 7s. 6d. per 1000 realize £281, so that the balance-sheet is:—

RECEIPTS.	EXPENDITURE.
To Sale of 750,000 Oysters at 7s. 6d. per 1000 . £281	By Rent £18 ,, Stakes and Boats . . . 28 ,, Rope 32 ,, Collectors 20 ,, Baskets 2 ,, Labour. 160 Balance (Profit). . . . 21
£281	£281

But how can an industry showing only £21 profit per annum flourish? In the first place the above figures do not include the sale of Mussels and fish caught on the estate; in the second, the farm is usually worked by the proprietor and his sons, the labour therefore is not entirely a cash disbursement; and in the third place, the property is generally inherited from father to son, and is gradually improved, so that the 13 guineas per annum for depreciation, &c., may be neglected. But methods of lessening the working costs are much needed to make the industry more lucrative. Rent also is too high; and Government do little to encourage the industry.

In Lake Fusaro is another example of the Italian or Tarantine method, slightly modified. The bottom of the lake is generally muddy, and in many places covered with *posidonia*.

A maximum depth of 20 ft. frequently shoals to less than 3 ft. The water is turbid and rich in organisms. The density at 63½° F. is 1022. One modification here introduced consists in forming some 260 small mounds of stones (*rocchi*) in several parts of the lake. On these are deposited a number of Oyster-mothers brought from Taranto. Round these beds is planted a circular shelter palisade, in the vicinity of which, when the spatting season approaches, wicker baskets are sunk. Every morning these baskets are examined, and as soon as spat is noticed, the fascines used as collectors are immersed. Previously testing for the presence of spat in this manner has a practical advantage, in so far as the collectors are kept free from deposit and slime, and the adhesion of the brood takes place more readily. For mooring the collectors, stakes about 15 yards apart are planted towards the centre of the lake, and united by a grass rope. To this rope the collectors are tied, and weighted so as to be immersed 1 to 3 yards, according as they are nearer to or further from the stake. Other fascines are laid on the bottom. The

collectors are left one to two months, when they are taken into the stake enclosure. Later on the fascines are cut up and made into *pergolari*. When the time comes for remaking these, the big Oysters are not remade in *pergolari* or pendant ropes as at Taranto, but are placed in closed wooden chests suspended in the enclosures; the small Oysters, however, are remade as before.

These illustrations may suffice to describe the distinctly Italian system of Oyster culture. In the immediate vicinity of Venice, however, Oyster rearing is carried on in rather a different way. Breeding is not attempted, but young Oysters cast up or dredged are laid down in shallows (*valli*), or portions of lagoon with a varying depth of 9 to 12 ft., intersected by small channels (*ghebi*). At low water the bed of the *valle* is dry, the channels alone remaining navigable by small boats. The water is always calm, with rapid currents in the channels at ebb and flow. Close by debouches a branch of the river Brenta supplying fresh water, and thus explaining the inaptitude of the locality for breeding purposes. The Oysters grown here, for the most part on shelly sand, are regular in form, clean and strong shelled, but their development is slow. At one year old the average diameter is $\frac{4}{8}$ to $1\frac{1}{8}$ in.; at two years of age only a few are saleable; the majority must be kept another year to reach market size. This system more resembles the French method.

II.—FRENCH, DUTCH AND AUSTRIAN OYSTER CULTURE.

Along the French littoral of the Atlantic, especially at Arcachon and Auray, Oysters are largely farmed. The basin of Arcachon, one and a half hours by train from Bordeaux, has a circumference of 50 miles. A tongue of sandy ground, wooded with pine, extends from north to south, where an inlet places the basin in communication with the Atlantic. Along the shore of this inland sea, 10,000 acres of beach are dry at low water, and afford sites for the farms (*parcs* or *claires*), which are divided and enclosed by embankments of fascines and earth, serving not only to mark the farm, but also to retain the water which at flood enters through self-closing sluices. The area of an average-sized farm is 150 by 325 ft., and it is usually intersected by 6 ft. wide canals.

For collecting spat, curved tiles are used. These are piled

up in groups, fastened together by a wooden frame or iron wire, and then dipped in lime and cement. From the 30th May to 16th June is generally the best time for laying the collectors, which, every three months, are taken to pieces, cleansed and relaid.

After eight to nine months the tiles are taken ashore, and the young Oysters removed by a special knife. This process is called *détroquage*. When it is accomplished, the Oysters are washed and placed in safes called ambulances. These are made of rough rectangular tarred wood frames, provided with short 18-inch legs, and a moveable top. The ends, sides, tops, and bottoms are mostly of galvanized netting; thus the flow of water is not impeded, whilst the Oysters are secured from their enemies. Every day at low water the safes, which are then dry for several hours, are examined, and the contents cleaned and re-arranged if necessary. In five to six months the Oysters usually measure $1\frac{3}{8}$ to 2 in. diameter; and are then removed from the ambulances and bedded in the parc.

At Cape Breton, however, the Oysters are not bedded, but reared entirely in safes. Their growth is thereby accelerated, and in seven months their diameter reaches $3\frac{1}{2}$ to $3\frac{3}{8}$ in.

Oyster rearing at Thau, near Cette, is chiefly noteworthy for the method by which the ambulances are secured. The Oyster farms here are in reality rafts floated on empty petroleum barrels, and moored in the canal leading from Thau to the sea. The bottom of the canal is muddy sand, the current strong, and the position unsuited for bedding; safes therefore are used. These are tarred wooden trays with wire netting or wooden lattice bottoms. On these trays rows of $1\frac{3}{8}$ to 2 in. Oysters brought from Arcachon are laid, one Oyster leaning against its neighbour, joints downwards, the bigger Oysters in the centre, the smaller at the sides. About twelve to fifteen trays are then placed on the top of one another, and secured to an empty barrel by two chains passing round the lot. The apparatus is then immersed and moored to a floating beam. In this way the Oysters are left to grow to maturity, but every three months the trays are raised and cleaned by dashing water over them. In eleven months the Oysters reach $2\frac{4}{8}$ to $3\frac{1}{8}$ in. diameter, and are ready for market.

It may passingly be noted that on the French coast of the Atlantic, suitable localities for Oyster rearing are very numerous, but those for breeding purposes are practically confined to

Arcachon and Auray, whence numbers of young Oysters for rearing are obtained.

DUTCH OYSTER CULTURE is very similar to the French procedure at Arcachon. The farms vary in size and complexity according to the amount of capital invested, but they conform to a general type of the following character. Each, says Dr. Fowler, whose description I here follow, consists of two sections: the one, an area of 12 to 150 acres in the bed of the Schelde, covered at half-tide; the other, on dry land, comprising the necessary buildings and ponds, or *putten*. The river section is generally divided into one area for the collectors, and another often some distance off, where the half-ware, or young Oysters, are placed to grow to a marketable size. The river water is conducted through a canal and sluices into the ponds, which can also be put into direct communication with one another by other sluices. The natural rise and fall of the tide effects the changing of the water. The method of procedure is this:—The collectors, common roof tiles, coated first with hard, afterwards with soft lime, and thoroughly dried, are set about June in the bed of the Schelde at low water, at right angles or broadside to the current, and sloped so as to make little eddies, into which the swimming spat may be swept; they lie there, except for being occasionally swilled in water to wash off the mud, till September or October, by which time, if the season be good, numbers of tiny Oysters will be found adhering. The tiles are then brought ashore and arranged in a pond in about 3 to 4 ft. of water, which, as explained, is constantly changing. Here they remain till February, when the young Oysters are detached, and placed in the hospitals or ambulances. These, like the French, are generally made of tarred wood, and are shallow trays about 6 in. deep, standing on legs about 6 in. off the ground; they rest on the bottoms of ponds, singly or in two tiers, according to the depth of water, 3 to 5 ft.; in some cases they are allowed to float. Here the young Oysters remain for about two months to recover from any damage they may have incurred in detachment; at the end of this time they are bedded out on the private beds in the Schelde. The grounds on which they are laid are occasionally cleaned by dredging without a net. The Oysters are considered marketable in the third and fourth year, and are then dredged up and laid down in the store

pond ready for use. The store pond is generally floored with tarred planks, an expensive material, but found to be better than either the natural ground, which becomes foul, or than brick, which is too cold. The water is kept about 4 ft. in depth.

AUSTRIAN OYSTER CULTURE is interesting as presenting a combination and evolution of the preceding systems. The Austrian Society for Fisheries and Sea Fishing appears to have begun Oyster culture more or less on French or Dutch lines, but to be now adopting mostly the Italian system. In 1889 the society established a farm at Zaule, near Trieste. At some 120 yards from the shore, an area of 100 square yards was enclosed by stake work, 20 yards long by 5 yards wide, with a depth of 4 yards at mean tide. Above high-water mark the stakes were united by cross bars with supporting piles at intervals of $2\frac{1}{2}$ yards. These stakes were also $2\frac{1}{2}$ yards out of water at low tide, and were driven 4 to 5 yards into the thick muddy bottom. From the cross bars were hung frames of galvanized wire netting, 2 by 3 yards, intertwined with branches for the double purpose of collecting spat, and preventing it from being carried out of the enclosed space by any seaward current. Within this space were placed collectors of every kind, and between them Oyster-mothers were placed in cages of wide-meshed wire netting, so fixed that they hung $1\frac{1}{2}$ yards under water. During the months of January and March the first young Oysters were detached from the collectors to the number of 40,000, and, placed in breeding safes, suspended from the palisade in about 2 yards of water. After this trial the society enlarged the enclosure to 400 square yards, half of which was to serve as a breeding, and half as a rearing, ground. But in the spring of 1892 the erection of a petroleum factory so polluted the water that the undertaking had to be abandoned.

The society then initiated experiments at Palazza, where shallows of 30,000 square yards, with rather less than one yard depth at low water, were used. The bottom is hard shelly sand. In 1891, 5000 lime-coated tiles were laid in heaps as collectors. In 1892, 100,000 young Oysters were detached, and placed to grow in galvanized wire safes. These were suspended from ropes attached to stakes, and hung $1\frac{1}{2}$ yards under water at low tide. Both stakes and ropes were in the Moreri channel, which is about

50 yards wide, and 5 to 8 yards deep, with an earthy mud bottom; the water is rich in organisms. In April, 1893, recourse was had to the Italian fascine collectors, and the Tarantine system of rearing. The growth of the Oysters so reared was very rapid. After seven months' treatment they increased to a diameter of $2\frac{2}{5}$ to $2\frac{4}{5}$ in., or at the rate of $\frac{2}{5}$ in. per month.

At Bandon, near Fasana, Oyster culture under Signor A. Gareis has for some time been in use. In a depth of 4 yards at average half-tide, a palisade of fifteen rows of stakes has been erected, the stakes being set 5 yards apart, and united by an iron wire. From this wire, collectors laden with young Oysters from Pola are suspended one yard apart. The first collectors were metal rectangular frames 4 yards long, with thirty-six to forty iron vertical blades about 32 in. long; but these were abandoned in favour of wooden frames, from which hung juniper branches. These wooden collectors, which proved cheaper and more durable than iron, are dipped in pitch and sand before use. The young Oysters remain on them until fully reared.

To give the final fattening, Signor Gareis has constructed a small basin, 30 by 20 yards, with gravel and pebble bottom. The basin is divided into compartments, 1 by 10 yards, and is fitted with sluices opening with the flood and closing with the ebb. By this means the Oysters even at low tide are still covered with 12 in. of water, whilst at high tide there is more than one yard. The sea-water near the basin is mixed with fresh, and the fattening of the Oysters is very rapid.

Near Jagnina, artificial Oyster-rearing is conducted by Signor S. Bielovucic. An arm of the sea, surrounded by hills, forms a lagoon of some 200,000 square yards. The bottom is mostly sand mixed with clay. The depth of water varies from 5 yards at the extremities to $3\frac{1}{3}$ yards at the middle, whence it shoals off towards the west shore, leaving there a slip of about 10 yards wide dry at low water. The collectors used were, at first, ninety heaps of lime-coated curved tiles, 20 in. by 6 in., sixty of these being superimposed in layers to form one heap, or collector. The tiles were strung together through a hole at each end, and the whole pile rested on two blocks of wood. These collectors were immersed in depths varying from $2\frac{1}{2}$ to $3\frac{1}{2}$ yards. Besides these, eighty bundles of furze, as collectors, hung from a chain extended from stakes in the centre of the lagoon, in a depth of 3 yards, and

beneath them, on the bottom, Oyster-mothers were placed. When $1\frac{3}{8}$ to 2 in. in diameter, the Oysters are taken from the tiles and bedded along the western shore. Those attached to the furze collectors are treated on the Tarantine method, the necessary palisade being erected in a depth of $3\frac{1}{2}$ yards at half-tide.

The French and Italian methods therefore are here worked together. The Oysters grown on the former method are regular in form, but slow in growth; those reared on the latter system are less regular in shape, but rapid in development.

The Oyster culture at Lussinpiccolo is noteworthy for the method of suspending the collectors. The sea here, even close to the shore, is deep, and the fascines which the proprietor, Signor Smircich, intends to adopt next year are to be suspended from a raft. Hitherto slabs coated with tar have been so hung, and the Oysters, when detached, have been reared in safes; but it is likely that the Italian system of *pergolari* will be adopted. Probably from a deficiency of fresh water, fattening cannot be effected.

At Ponte, on the Island of Veglia, under the auspices of the Prior of the Monastery and the Parish Priest, young Oysters brought from Grado have been reared in safes supplied by the Fishery Society. The trial has been so successful that an Oyster farm, similar to that at Lussinpiccolo, is established, and here also it is probable that the Italian or Tarantine system will be followed.

From this brief description of the chief continental methods of Oyster culture, I shall now deduce certain practical conclusions.

III.—PRACTICAL CONCLUSIONS.

These refer to the selection of breeding, and of rearing and fattening grounds, as also to the manipulation of collectors and other details of the several systems described.

A topographical study of the various Oyster farms show that, roughly speaking, breeding and rearing grounds seldom, breeding and fattening grounds never, can be identical. In fact it may be said that the more favourable are the conditions for breeding, the less favourable they are for rearing and fattening, and *vice versâ*. Why this should be so is not so easy to tell. The question of Oyster reproduction is indeed exceedingly obscure. Oyster-mothers, or spawners, have been placed on rearing-grounds, they

have been observed heavy with spat, the brood has been emitted, collectors laid around, and yet scarcely a trace of deposit has been found. Whether, under the conditions favourable to artificial rearing, the spat is not properly fertilized, or the brood are born too feeble to survive, or are deficient in the secretion by which they adhere, or are otherwise wanting, is hard to say; but the fact remains that the mixture of salt and fresh water, that is most favourable to rapid growth and development, is apparently fatal to successful reproduction.

This fact narrows the choice of a situation for a breeding-ground, but the selection is further restricted by a condition that every locality suitable for successful reproduction must satisfy, *i. e.*, it should be near a rearing-ground. When first they adhere to the collectors, the young Oysters are very small and delicate. Now for several practical reasons the collectors should rarely be left on the spatting-ground for more than two, three, or at most four months. Hence the young Oysters have to be moved at a critical age, and if the rearing-ground be not near at hand, the mortality is likely to be heavy. It is only when the Oysters have attained a diameter of $1\frac{1}{2}$ to $1\frac{3}{8}$ in. that they can be safely carried to a distance. A salinity of sea-water, and contiguity to a rearing-ground therefore are two conditions of aptitude for breeding purposes; but in selecting a breeding-ground there are also some physical signs by which suitability may be further recognised. The most unmistakeable sign of all is, the existence of an Oyster-bed. But even where this is wanting, the presence of Oysters, especially if they are numerous, is a sure indication of aptitude. Yet the absence of Oysters is not a positive proof of inaptitude for breeding purposes, for in many very suitable places this absence has been traced to the deficiency of solid bodies on which the brood could collect. Not unfrequently where Oysters were scarce, the construction of a breakwater, or stonework, has sufficed to make them numerous. Spezia and Venice may be cited as instances. Another, and to some extent satisfactory indication of fitness, or the reverse, is the nature of the bottom. A clear, clean, and homogeneous mud, like clay, appears to be very suitable, and it is a favourable indication if the calcareous tubes of *Serpulæ* (*vermi anellidi tubicoli*) are found adhering to any submerged body. Grounds covered with algæ and *Zostera* (sea-wrack) are to be avoided, as also those of quartz sand, especially

if near to a steep rocky coast exposed to a heavy sea. Shifting sands and soft mud also are objectionable. These indications are useful, but not absolute, especially as regards mud. This *per se* would not be injurious to reproduction, if it had not the disadvantage of being too soft and slimy.

When the presence of these marks indicate a likely ground, a test may be made by laying Oyster-mothers, and, at the spatting season, setting collectors. For test-collecting only, the kind of collectors used is immaterial, but when it is a question of collecting for rearing purposes, the collectors should be adapted to the system in view. Thus, if the Italian method of rearing is to be used, wood fascines are preferable; for they can be easily worked up into *pergolari*. But if the French or Dutch plan of bedding is to be employed, then tiles are better, for the Oysters can be more easily detached. Where both methods are to be adopted, both sorts of collectors should be used. Collectors of small shells and Oyster culch, as Signor Allodi points out, present serious difficulties in detaching the young Oysters. As regards the position for setting collectors, it may in general be said that they should not be laid in shallow water, or too near the shore. It is difficult to give figures, but at Spezia the collectors are deposited a full $\frac{5}{8}$ mile from the shore, and at a depth of $12\frac{1}{2}$ yards. At Taranto the closest they are to the shore is $\frac{5}{8}$ mile, but the usual distance is more, and even as much as $12\frac{1}{2}$ miles; the depth is $12\frac{1}{3}$ yards. Of course, in setting collectors, it is advisable to consider the direction in which the current is likely to carry the spat, and to set them not end on, but broadside to the direction of the current.

As to the number of collectors to be employed, the more the better. In any case not fewer than 400 to 500 should be used at any one point. Thus if a trial is to be made at two points there should be a thousand collectors, and so on.

The time for setting the collectors naturally coincides with that of the spatting season. The collectors therefore should all be in readiness at the beginning of the month in which the spat is expected. If it is considered desirable to keep them dry and clean till the spat actually appears, and this is an advantage, then test-collectors should be laid. These should be frequently and carefully observed, for the shedding of the spat takes place almost simultaneously among all the spawners, and unless the collectors

are immediately used, much may be lost. After immersion, the collectors should be examined fortnightly, and if no deposition of spat has taken place, they can with advantage be taken ashore, quickly dried, and as quickly replaced. Tiles should invariably be dipped in lime and cement; this facilitates both the adhesion and the removal of the young Oysters. Fascines also should be dipped to give a better surface for adhesion.

How long, it may be asked, should the collectors be left after the spat is deposited? The less time the young Oysters remain on the collectors *in situ*, the less will be the loss inflicted by their enemies. On the other hand, the brood are at first very delicate, and exposure to the air, or the sudden change from the deep water of the breeding-ground to that of the farm, may suffice to kill them. Consequently much experience and prudence is necessary. At Spezia, the time allowed is usually forty, to a maximum of sixty days; at Arcachon, eight to nine months; but in this latter case the collectors are taken up and cleaned every three months.

Another practical consideration in the selection of breeding-grounds relates to the necessary physical conditions of the sea. Both temperature and saltness are important factors in the question of reproduction. Within ordinary limits, the higher the temperature, the greater the quantity of spat emitted. Cold may delay the spatting season, heat will accelerate it. As to the best degree of saltness, it may be said approximately that at a temperature of 68° F. to 86° F. the density of the water should not vary much from 1025.

Turning now to the question of Oyster-rearing, it appears that, in general, artificial rearing cannot be conducted in the absence of three conditions. First, protection from heavy sea; secondly, moderately shoal water; thirdly, the presence of a certain amount of fresh water from either spring, river or canal. Wherever these conditions are found, artificial Oyster-rearing is possible. The necessity of the first two conditions is obvious: it is not a question of laying down and withdrawing the Oysters ready for market, but of continual attention and work which is not possible except in calm water of moderate depth. The importance of fresh water for rearing purposes is both negative and positive—that is to say, it is on the one hand necessary to counteract evaporation, which in shoal water, especially in warm climates, is

likely to increase the salinity to an undesirable degree, and on the other hand, its presence enables the fattening ground to be identical with or contiguous to the rearing-ground, thereby effecting economy of labour. For fattening purposes fresh water is indispensable. The density of the most suitable mixture appears to be about 1014. Positions then, where there are surface currents or springs of fresh water, or which are near the mouth of a river or canal, are, if other requisites are present, the most eligible sites for rearing and fattening grounds. There should be daily tidal changes of water; and the stronger the current the better for the Oysters, as they thereby receive more abundant nutriment. The beneficial effect of strong currents is very noticeable at Thau. The water need not be limpid or clear. Turbidity is not injurious, provided the Oysters are not allowed to become choked with the mud deposited. Too much organic impurity is to be avoided. As the upper layers of water are fresher than those beneath, safes and baskets used for fattening purposes should be suspended near the surface. For the same reason, the Oysters near the top of the rope pendants in the Italian system fatten quicker than those lower down, but equality can be restored by occasionally inverting the ropes.

The lowering of the density from the 1025 of the breeding-ground to 1014 at the fattening site, explains why the latter is not suitable for breeding purposes, and why it is useless to set collectors in the immediate vicinity.

The fattening power of fresh water, though known to antiquity, is perhaps even to-day imperfectly understood. The result is certainly not due to the great nutriment contained in the fresh water, for in many cases it is freer from organisms than the sea water. In his 'Ostricoltura,' Professor Carazzi attributes the effect to the influence of fresh water in increasing the action of the liver, and favouring metabolism or the assimilation of food. This explanation derives support from the Oyster malady, called by De Montaugé "hepatitis," or inflammation of the liver, met with in the case of over-fed geese and birds. This affection is found only in Oysters put to fatten in too fresh water, and can be cured by returning the patients for a time to the sea. Whatever may be the true explanation of its influence, fresh water is undoubtedly desirable in a rearing and essential to a fattening ground.

But when it is present, and the site is otherwise eligible, there is still the question of the bottom. The system of culture must either be adapted to this, or a site must be found in which the nature of the bottom is adapted to the system. This is the general rule, but in cases where the Oysters are to be reared in floating ambulances, as at Thau, the nature of the ground is immaterial.

Except where the bottom is too hard for stake-driving, the Italian Tarantine method can be used anywhere. But the best site is where the bottom is of good holding material; and where the water is not less than 4 yards nor more than 12 yards deep—a less depth exposes the Oysters to sudden changes of temperature, and a greater depth makes stake-driving difficult and costly. The palisade may in general be rectangular, long and narrow, with the head or short side facing the prevailing wind or current.

For the French and Dutch systems of bedding, clean firm bottoms, such as coarse sand, gravel, hard clay, are required, and the best arrangement is one that permits the operator at will to draw off the water at low tide, so as to sort and arrange the Oysters at ease, and give them daily exposure to the air. This periodical exposure is an important commercial item, as it is found that Oysters so habituated live for a longer time out of water.

The Austrian is not a hard and fast system, but inclining mostly to the Italian practice, utilizes also French methods according to the nature of the ground.

In comparing the relative advantages of the several systems, it appears that Oysters laid to mature on the bottom, as in the French and Dutch methods, are more exposed to the attacks of worms, crustacea, and molluscs, &c., and, unless daily exposed to the air, they do not acquire the property of remaining many days closed when taken out of water; lastly, they develop slowly, and do not reach saleable size till after the second or third year, and are not sold as Oysters of first quality till the fourth year. On the other hand, the system is perhaps cheaper, and the Oysters are more regular in shape and stronger in shell. Where Oysters are grown entirely in ambulances, the system shares the advantages of the Italian method, in which the Oysters are suspended and

better protected from their enemies, develop rapidly, and become saleable in about half the time required by the French or Dutch bedding method. Observations taken at Spezia show that out of one hundred Oysters reared on the Tarantine plan, at fifteen months of age one-third were saleable as second quality Oysters, with a mean diameter of $3\frac{1}{5}$ to $3\frac{3}{5}$ in.; one-third as third quality, with a mean diameter of $2\frac{2}{5}$ to $3\frac{1}{5}$ in.; and one-third required further cultivation. At eighteen to twenty-four months of age one-half the Oysters were of first quality, that is, more than $3\frac{1}{5}$ in. diameter; and of the other half, part were of second quality, and part of third quality—all being saleable.

It would therefore seem that where a keen demand and high prices exist, any method of suspending Oysters during growth is likely to be most successful.

It may not be amiss to add a few words as to the stakes that form so important an item in the Italian Tarantine method. The experience of Dr. Carazzi tends to show that *Pinus pinaster*, also called *Pinus maritima*, or cluster pine, is the most durable material. That grown on dry siliceous soil exposed to the sun is preferable to that grown on damp clayey ground, sheltered from sunlight; for the bark of the former is found to adhere more firmly to the wood, and to resist longer the attack of the *Teredo*, or shipworm. This adhesion is also favoured by planting the stakes as soon as possible after they are cut. As a further protection against the worm, a certain number of the stakes should be withdrawn every year, and taken ashore to dry until any worms are killed, when they can be replaced. The life of a stake varies from three to eight or ten years.

For protection from the *Teredo*, ambulances are usually dipped in gas tar thinned with petroleum. This can be conveniently done by building a brick bath heated by a small furnace.

THE OTTER, *LUTRA VULGARIS*.

BY THE EDITOR.

(Continued from Zool. 1894, p. 47.)

IN the last instalment of this article (pp. 41-47) we left off with a graphic description of the actions of the Otter in its natural haunts, as observed in Scotland by the Brothers Stuart, and printed in their delightful 'Lays of the Deer Forest.' We have read nothing better, or more true to nature. It is evident, from their account, that the Otter, when undisturbed, enjoys a frolic in the water with its kind, just as other animals will gambol upon dry land. We have been eye-witness to this in the case of Foxes, Badgers, and Squirrels, but it has never been our good fortune to see what has been described and vouched for by several American writers in the case of the Otter, namely, its enjoyment in making and using a "slide" upon the snow-covered slope of a hill-side.

Sir John Richardson, one of the earliest writers to describe with precision the habits of the North American Otter (*Lutra canadensis*), has remarked that when its usual haunts are frozen over, it will travel overland to a great distance through the snow, and if then seen and pursued, it will throw itself forward on its belly, and slide through the snow for several yards, leaving a deep furrow behind it. This movement is repeated with such rapidity that even a swift runner on snow-shoes has much trouble in overtaking it. But this "sliding" is not only resorted to in the endeavour to avoid pursuit, and is something more than an easy way of slipping down a wet sloping bank to the water. It seems to be a favourite mode of diversion. J. D. Godman, in his 'American Natural History' (Philadelphia, 1826), remarks:—

"Their favourite sport is 'sliding,' and for this purpose in winter the highest ridge of snow is selected, to the top of which the Otters scramble, where, lying on the belly, with the fore-feet bent backwards, they give themselves an impulse with their hind legs, and swiftly glide head-foremost down the declivity, sometimes for the distance of twenty yards. This sport they continue apparently with the keenest enjoyment, until fatigue or hunger induces them to desist."

Audubon has described this remarkable trait in the Otter from personal observation. He says:—

"The Otters ascend the bank at a place suitable for their diversion, and sometimes where it is very steep, so that they are obliged to make quite an effort to gain the top; they slide down in rapid succession where there are many at a sliding-place. On one occasion we were resting on the bank of Canoe Creek, a small stream near Henderson which empties into the Ohio, when a pair of Otters made their appearance, and, not observing our proximity, began to enjoy their sliding pastime. They glided down the soap-like muddy surface of the slide with the rapidity of an arrow from a bow, and we counted each one making twenty-two slides before we disturbed their sportive occupation.

"This habit, he adds, of sliding down from elevated places to the borders of streams is not confined to cold countries, or to slides on the snow and ice; but is pursued also in the Southern States, where the ground is seldom covered with snow, or the waters frozen over."

These observations have been confirmed by subsequent writers, and within the last few years. Thus a correspondent of 'Forest and Stream,' writing from the Grand Rapids, Michigan, in March, 1889, remarked:—

"The 'Otter-slide' is made and used for the same reason that boys make a toboggan-slide, a place where they can play, and have fun. The Otters will play for a long time, sliding down, and scrambling back with as much apparent enjoyment as dogs having a frolic, or boys on a toboggan, and with no other motive. These facts were gathered from an old hunter and trapper, who was one of a surveying party with the writer in Michigan."

Again, in 'Temple Bar' for December, 1891, an "Old Trapper" writes:—

"Otter-slides are as smooth and slippery as glass, caused by the Otters sliding on them in play in the following manner:—Several of these amusing creatures combine to select a suitable spot. Then each in succession, lying flat on his belly, from the top of the bank slides down over the snow and plunges into the water. The others follow, while he crawls up the bank at some distance, and, running round to the sliding-place, takes his turn again to perform the same evolution as before. The wet running from their bodies freezes on the surface of the slide, and so the snow becomes a smooth gutter of ice."

Thus, extraordinary as it may seem, there appears no reason to doubt what has been vouched for as an observed fact by those who have described it.

Few animals vary more in size than the Otter, judging by the measurements and weights which have been recorded from time

to time by different observers; but allowance should be made for age, and possibly also for sex, although there is no marked difference in size between the male and female (the latter perhaps being somewhat smaller), and both continue to grow for some years after reaching puberty.

The measurements given by Bell in his 'British Quadrupeds' must have been taken from comparatively young animals. A good Otter will measure about four feet in length, and weigh from 20 to 25 lbs., the female a few pounds less. We can scarcely credit the statement of Pennant that (a century ago) one was found in the River Lea, between Hertford and Ware, the weight of which was 40 lbs. The weight in this case, probably, was only estimated.

In September, 1888, we were Otter-hunting with Mr. Collier in Somersetshire, and one day, after a run of some eight miles, killed a good Otter, weighing 16 lbs. On that occasion Mr. Collier informed us that during the previous week he had killed three Otters, whose united weight amounted to 64 lbs. In April, 1892, we were out with Mr. Courteney Tracy's pack on the Wiltshire Avon, and saw two Otters killed. The owner, in reply to our enquiries, then informed us that it would be an unusually heavy Otter that would weigh 25 lbs.

Our old friend Mr. F. H. Salvin, of Whitmoor House, Guildford, saw one killed in the Lune, near Lancaster, some years ago, by Mr. Lomax's Otter-hounds, of the exceptional weight of 25 lbs.; and Mr. Lomax then told him that the largest he ever saw weighed 30 lbs. It was found in a hollow willow in Warwickshire, and from the worn condition of its teeth was considered to be very old.

Mr. F. V. Starkey, of Wrenbury Hall, Cheshire, reported that in February, 1886, an unusually large Otter was killed in the brook which runs through his village. The length was stated to be $48\frac{1}{2}$ in., and the weight 30 lbs.

The late Hon. G. R. Hill was of opinion that in Shropshire, where he resided, and where, as is well known, he hunted a pack of Otter-hounds, the average weight of a full-grown dog Otter is from 20 to 25 lbs., and of a bitch Otter from 15 to 18 lbs. The largest he ever killed, as reported in 'The Field' of June 20th, 1867, was an old dog Otter weighing 31 lbs. This is one of the heaviest British-killed specimens of which we have been able to

find any record, though it has been equalled by another which was killed by the Carlisle Otter-hounds. We learn from Mr. H. A. Macpherson, on the authority of the huntsman of that pack (T. Parker), that in Cumberland, bitch Otters vary in weight from 14 to 17 lbs., that he once weighed one of 20 lbs., and that the largest he ever saw weighed 21 lbs. "Dog Otters," he says, "when in condition, weigh from 22 to 26 lbs. Otters of 27 lbs. have been killed on both the Esk and the Lyne in recent years, but they were very big fellows. The heaviest and longest Otter that has been killed by the Carlisle Hounds was drowned in the Eden opposite the Ambrose Holme. This grand dog Otter scaled 31 lbs., and is preserved in the possession of Mr. Wilson, of Carlisle."* It has nevertheless been eclipsed by one that was killed more than thirty years ago by the Bishop Auckland pack, hunted by the late Mr. John Gallon, and which is stated to have weighed no less than 32 lbs.; but, in the words of the recorder, "this Saul among the people must be regarded as a very extraordinary specimen, and far beyond the usual size."†

A large Otter, much above the usual weight, was killed, according to Mr. Macpherson (*op. cit.*), in a singular manner in October, 1891. It was run over by an express train while crossing the railway line at Little Salkeld Station, M. R., and was found to weigh 26 lbs. Mr. Southwell informs us that a similar fate befel an Otter in Norfolk in December, 1893, when one thus run over was forwarded to Mr. Gunn, of Norwich, to be stuffed. He has noted also ‡ that one was taken in a bow-net at Ormesby, which weighed 27 lbs.

A male killed at Ranworth, in January, 1871, after three weeks' intense frost, although in a very emaciated condition and quite empty, weighed 30 lbs., its length being $50\frac{1}{2}$ in. A male killed in March, 1866, weighed 30 lbs.; and an old male, killed at Bowthorpe, weighed 37 lbs., being 48 in. in length. These, however, are quite ordinary beasts compared with one, also a male, taken by the Carmarthen Otter-hounds at the Cowen, and which an old sportsman says he saw killed and weighed. The

* 'The Fauna of Lakeland,' 1892, p. 37.

† 'The Field,' May 17th, 1862; and Meynell and Perkins, 'Catalogue of the Mammalia of Northumberland and Durham,' in Trans. Tyneside Nat. Field Club, vol. vi. (1864), p. 132.

‡ Trans. Norf. Nat. Soc. 1872—73, pp. 82, 89.

weight was 50 lbs., and the length, from nose to tip of tail, 66 in.* If this weight was actually ascertained and not merely estimated, we may well accept Pennant's statement as to the Lea Otter, which is said to have weighed 40 lbs. The weight of an Otter relative to its length must depend very much on its condition.

Otters, as a rule, are not liable to much variation in the colour of their fur, which is very thick, close, and shining. This is generally of a rich dark umber-brown, darkest on the back (looking almost black when wet), lighter on the sides, and palest underneath; in this respect resembling our common Water Vole. Nevertheless, white, cream-coloured, and even spotted varieties have been met with and recorded at rare intervals.

In Mr. Henry Evans's collection at Small Isles there is a pure white Otter, which was killed at Jura, and another is preserved at Kildalton House, Islay.† In the Belfast Museum also there is a white Otter, which was killed in Islay in April, 1850.‡

More than thirty years ago ('Field,' May 17th, 1862) two cream-coloured Otters, killed in the River Aln, were in the possession of Mr. Grey, of East Bolton; and about the same time there was preserved, at Newcastle-on-Tyne, a stuffed specimen, which was "spotted all over the body with white ticks, precisely similar to some pointer-dogs."

In 'The Zoologist' for 1869 (p. 1926), Mr. T. E. Gunn reported the capture near Yarmouth, in March of that year, of an old female Otter and two young ones about a fortnight old. The coats of the latter presented two distinct shades of colour, one being of a very pale brown, and the other very dark, nearly as dark as the adult; the mother was slightly piebald, having a few small patches of white on the crown of the head and neck.

In the 'Fishing Gazette' of June 24th, 1893, Mr. S. J. Hurley, of Killaloe, reported that a perfectly white Otter had been recently seen in the Shannon, and that some years previously he had seen one in the same locality with a white circle round its neck. A

* 'Land and Water,' vol. ii. p. 51.

† Harvie Brown and Buckley, 'Fauna of Argyll,' 1892, p. 17.

‡ When visiting Paris, in 1889, on the occasion of the last Exhibition there, we saw in the Museum of the Jardin des Plantes a white Otter which had been sent from China, and we had previously noted another, which was exhibited in 1887 in the Loan Collection of Hunting Trophies in the American Exhibition in London.

friend of the late Edward Alston once saw an Otter "with an irregular white collar round its neck, seemingly formed of a collection of spots."

A specimen in the Museum of the Jardin des Plantes, Paris, which has "the whole of the upper part of the fur irregularly spotted with pure white," has been noticed by Bell,* who remarks:—"It is by no means rare to see an Otter having *a few* white spots, though they are rarely as much marked as the one above mentioned." He adds:—"It appears to be a variety analogous to that which often occurs in birds having a few white feathers, which at the moulting period are often lost, and replaced by others of ordinary colour. This variety should not be confounded with albinism, which is retained for life."

We have heard of a black Otter, but have never seen one. A correspondent of the 'Fishing Gazette' reported (Oct. 3rd, 1891) that a fine specimen of the black Otter had been caught at Burnhervie, Aberdeenshire. It is possible that the reporter may have been deceived by the appearance of the animal when just taken out of the water, for the fur of a dead Otter when wet and lying close to the body looks much blacker than when the living animal has shaken off the moisture from its coat. And here we may remark how easy it is to be deceived by the appearance of an Otter which has been stuffed for many years. From long exposure to the light the fur becomes gradually paler, and in extreme cases almost bleached, so that we can well imagine such specimens may give rise to reports of cream-coloured Otters, and even of so-called white ones.

Passing now from the subject of "Variation," we come to the more vexed question of "Gestation," and upon this many pages might be written. But it must suffice if we summarise the observations of some of our friends who have paid special attention to the subject, and note briefly the results at which they have arrived.

No one, probably, has paid more attention to the subject of reproduction in the Otter than Mr. A. H. Cocks, of Marlow, who got a pair to breed in confinement, and Mr. Southwell, of Norwich, who, living in a county wherein these animals are more than usually common, has enjoyed good opportunities in the

* 'British Quadrupeds,' 2nd ed., 1874, p. 178.

district of the "broads" for learning much about their habits. In the 'Transactions of the Norfolk Naturalists' Society' for 1872-73, will be found an article (pp. 79-90), in which the last-named observer has given some most useful statistics relative to the number of young at birth, date when found, and probable age, with a view to fix the date of birth. Mr. A. H. Cocks, in 'The Zoologist' for 1877 (p. 100), contributed some further information, chiefly in regard to the latter point; and, replying to his remarks, Mr. Southwell (*tom. cit.* p. 172) dissented from his view that Otters, like other animals, breed most commonly in the spring, maintaining that the period of reproduction is in the winter—namely, from December to February inclusive.

In the 'Proceedings of the Zoological Society' (Feb. 1882), Mr. Cocks gave an account of the breeding of a pair of Otters in his possession, and published some supplementary notes in 'The Zoologist' for 1882 (pp. 201-204), chiefly in relation to the growth and daily behaviour of the young, of which two were produced, the period of gestation being estimated at sixty-one days. It proved afterwards to be sixty-three days.

From a subsequent article by Mr. Southwell (Zool. 1888, pp. 248-251), and communications from other contributors, we are led to the following conclusions:—that the Otter breeds in late autumn and winter, but more often in winter. Mr. Hurley, a competent judge, says the young are born towards the end of February—that the period of gestation is like that of the dog, precisely nine weeks; that, although the number of teats in the female is six, the number of young produced at a birth is generally two or three, very rarely four; and that they are born blind, and are suckled for six weeks, not touching fish until they are seven weeks old. The fact that quite young Otters have been found in every month of the year is explained by their being the progeny of female Otters that have paired as they arrived at maturity. For fuller details on all these points the reader may be referred to the articles above quoted.

SEA-BIRD COLONIES IN THE ISLE OF MAN.

By P. RALFE.

For a number of years, but especially during the last three summers, I have had opportunities of visiting the breeding-places of sea-birds in the Isle of Man, and have during that period seen nearly the entire coast. The extreme north has a shore of sand and gravel, either flat or with cliffs of sand and clay. In the neighbourhood of Castletown the sea-edge is of low limestone, but with these exceptions our coast is of steep and often lofty rock, broken by many curving bays and creeks. The principal nesting-places are on the west and south-west (that is, between Peel and Port St. Mary, going south), but the east has also at least two points where sea-birds are present in some numbers.

As regards particular species, the result of the observations I have been able to make is as follows:—

The Herring Gull, *Larus argentatus*, is here vastly the most abundant of all species. At many points, and sometimes for very considerable distances in almost unbroken continuity, its nests are to be found. Its long protection by law has no doubt contributed to this. It swarms also all the year round in our bays and harbours, feeding upon fish-offal on the quays, and general refuse in the harbours, and perching on the adjoining houses and even the steamers lying alongside. In flocks of hundreds it follows the plough, or settles in the fallow fields all over the country. It would be an interesting question how far its winter numbers are increased in spring by the arrival of gulls which have spent the winter in places which offer them no nesting facilities.

As in winter a flock of the Herring Gull is often attended by one or two Lesser Black-backed Gulls, *L. fuscus*, so a breeding-station often contains a pair or two of the same species. But at two spots the Black-backs have formed small colonies of their own in the midst of the grey birds. Both of these are upon isolated stacks, and they are not far distant from each other. These colonies, like the Kittiwakes to be presently mentioned, were first shown to me by my friend Mr. F. S. Graves in 1891.

I have seen and heard of only one colony of the Kittiwake, *Rissa tridactyla*, of small extent, and inhabited perhaps by a few hundred birds, as described in 'The Zoologist' for May last. It seems to be at no time common on our coast.

The Shag, *Phalacrocorax graculus*, breeds at many points, often in scattered pairs, here and there in considerable numbers. At some of these places I have also seen a few Cormorants, *P. carbo*, in early summer, but never noticed a nest of the latter; and common as the Cormorant is with us in winter (in Douglas Bay at least it certainly outnumbers the Shag at that season), I have never anywhere met with many at breeding time. Sir Wm. Jardine, who visited the island about sixty years ago, remarks ('Birds of Great Britain and Ireland,' iv. 238) on the Cormorant's breeding on broad rock-ledges in the Isle of Man. He also describes a Shag colony on the lofty cliffs of the island's southern extremity, which he says was "the most extensive that ever came under his observation," and remarks that there were "hundreds of nests." Though still common there, I doubt if the Shag's numbers are anything like so great at the present time.

Of the *Alcidæ*, the Razorbill, *Alca torda*, is the most generally distributed, and I think increasing in numbers, and possibly even establishing new colonies. It does not, so far as I am aware, breed on the east side. The Guillemot, *Lomvia troile*, is confined to the south-west, but pretty abundant there. The Puffin, *Fratercula arctica*, is more local than either, appearing only at the southern extremity of the main island, and on the Calf, where it is numerous.

The Black Guillemot, *Uria grylle*, is present, not in great numbers, at a few points. At one station, which is frequented every year, on May 21st, 1893, I observed a dozen or more of these birds. A boat had been pushed into a creek immediately beneath their haunt, some crevices under the beetling top of a low precipice, and the whole sat crowded together, only a few yards distant from the intruders, with outspread wings, uttering a clear piping cry. Another small party resorts yearly to a similar place about a mile distant. In another locality, not far from this town, I had at various times in previous years noticed a few when passing by steamer, and, as it seemed a very suitable spot for their nesting, I went there twice last summer, but failed to see any trace of them. At a fourth locality I saw a few in 1890, but on subsequent visits have not been able to observe any. Probably they are decreasing in number. The Black Guillemot, as has often been observed, swims very close under the rocks, and often takes refuge there when alarmed.

One sees it only in the immediate neighbourhood of its holes at nesting-time, and it is very confident and easily observed.

Beginning at the north of the island, and going down the west coast, the sandy brows are exchanged for rock about two miles south of Kirk Michael. A few Herring Gulls and a pair or two of the Lesser Black-backed Gull, *Larus fuscus*, nest at some spots north of Peel. But the first colony of any extent is south of that town, and is easy—indeed too easy—of access. It extends in an interrupted fashion for about two miles, but its main strength is on a range of cliffs, called in Manx, no doubt from the orange lichen which plentifully crusts its upper face, Bing Buigh. A path leads from Peel Harbour across a waste heathery hill to a slate-quarry, now deserted; about a quarter of a mile before reaching this the track, skirts the highest of the precipices, and looks down upon the stony strand which just at that point lies at their feet. The cliff, perhaps 200 feet high, here runs inland from the sea, and above the strand is almost perpendicular, while diagonally across its face passes something like a rude rock stairway, ironically known in local speech as “The Ladder.” On the other side of the strand steep grassy brows, mixed with rock surfaces, descend almost to sea-level, and allow of a rather risky scramble to the bottom. At the point of the long precipice is a double cave, its two parts merging into one internally, but at the entrance separated by a great offshoot from the cliff above, which is prolonged into a singular mass of rock some fifty feet high, the flat summit of which cannot be reached from below. This outlier is a great Shag-roost, and fifty Shags or so dive into the clear water below when a boat approaches, while far up on the main rock-face others sit securely on their nests, from which they are, when incubation has once advanced, scarcely to be scared. A small colony of Razorbills mingles with the Shags, and a row of them sit with their dusky neighbours on the top of the outlier, the lower parts of which are profusely strewn with fragments of the weed used by the former in the construction of their nests (I saw it last summer strewn also with the fragments of Shags’ and Razorbills’ eggs broken there by some rapacious plunderer). In May the huge boulders and fallen earth of the beach were gay with the large dog-daisies of the Sea-feverfew, and up near the very top of the high cliff, on luxuriant grassy ledges, many Herring Gulls were nesting in

undisturbed security. But it is rather in the less precipitous and more varied surfaces on the other side of the strand that the gulls delight. Part of these slopes are covered with a rank abundance of the common nettle, and about here the nests are thickly scattered, usually in situations a little sheltered by some beetling brow. A little further south is another isolated rock, the "Cashtal Vooar," now commonly called, from its pointed horn, "The Church," and on its sea-side is another Shag-roost, while on its verdant top, and on the long steep brow of the mainland slope opposite, are more gulls' nests. Where the brow ends abruptly in a low steep cliff Shags' nests are pushed back into its shallow crevices between the overhanging ledges. In spite of the law, the Herring Gulls' nests are persistently robbed wherever they can be reached, but they nevertheless frequent the same spots year after year, as, for instance, on the brow just named, where there is no difficulty in walking down to and among them. The nests vary as much as do the eggs, from a few stalks of *Cochlearia* to a massive and almost neat structure of fine dry grass and leaves of the Thrift. I have never seen a single Black-backed Gull at this station.

Half-a-mile further south, also, at Traie Cabbage, so called from the Sea-kale, whose masses of blue foliage and white bloom enliven the strand, many Herring Gulls breed, and I have noticed that among the boulders of the beach there is one place that for twelve years or so has never failed to have a few nests. South of this shore are some lovely cliff-edges, where, in early summer, the sward is rich with rose-coloured Thrift, lilac-blue Squill, white Feverfew, and Campion, forming a very garden of blossom. Here and there, where some clear inlet leads to its cavern decked with glossy Sea-spleenwort, a Shag or two breeds. At the Gob-ny-Chassan, the extreme southern limit of the birds here, is a small but pretty colony of Razorbills, as well as a few at another point nearer Peel. When the tide is far out, the former station may be walked past. I think it has been established only within the last fifteen years.

Close to the Gob-ny-Chassan is the Ooig Vooar Cave, one of the finest on the island. Both here and at Traie Cabbage Jackdaws are abundant. For some little distance south of Glenmay, round the low point of the Niarbyl, no colonies are to be seen, but others are to be observed after passing the strand into

which the "Lhag" opens. Of the beauty of the white beaches the dark inlets, the green blossoming brows of this most charming and little-known portion of our coast, this is not the place to speak. Good numbers of Herring Gulls breed at Gob-yn-Ushtey; there are several steeply sloping brows occupied, some nests being placed deep among thick grass tufts, a thing of not common occurrence. Underneath is a "Shag rock," and some Shags nest in the abrupt and caverned cliffs in which the slopes end. The further side of the Gob (or point) is an enormous precipice, and the view southward from its top has a character of stern and desolate wildness very uncommon in our scenery. Beneath is the cliff just mentioned, sheer and bare of vegetation, and from your feet broken scree of stone and bracken, swarming with rabbits, fall to the water's edge further in front. Right ahead there heaves up a great mass of highland, part of the back-bone of the isle, presenting to the sea for miles a steep brow from 800 to 1400 feet in height, capped by the wind-swept watch station of Cronk-ny-Ircy-Lhaa, the whole reach without cultivated ground or inhabited house. As a rule, however, the actual cliff of this imposing coast is not of very great height, though the mountain is broken by clefts which make the task of keeping as close as possible to the sea a very toilsome one. In a long and barren gully which falls from the hill-top to the water lies the ruin of a little immemorial church, and beneath is a beautiful shore, where the rough white beaches of the Geinnagh Vane alternate with dark points, from whose dripping ledges springs luxuriant *Osmunda regalis*, and in whose high deep cavern the rocky walls are hidden by the gigantic growth of drooping Harts-tongue and *Asplenium marinum*. All along the Herring Gulls' nests are strewn, on the grassy ledges, the rough boulders, the rushes of earth, and the rough sheets of bare rock. Only one spot, the Stroin Vuigh, rivals the Gob-yn-Ushtey on this reach of coast. Here and there Herring Gulls breed all along to Fleshwick, the spots haunted by them conspicuous by their brighter green. Scattered pairs of Shags also breed at the more abrupt portions. At Stroin Vuigh a high cavern opens below the bird-haunted crags, and here, as well as in less numbers at one or two other places in the neighbourhood, the Razorbill, *Alca torda*, breeds. I saw last summer a few Lesser Black-backed Gulls among the crowds of Herring Gulls here.

On the other side of Fleshwick, Bradda presents somewhat

similar scenery, and much the same birds. On its northern parts many Herring Gulls breed, some on a series of craggy steeply hardly accessible, others near the inlet called Ghaw Dhoo, on brows where one can easily walk amongst them. Shags nest, but not in any numbers, in two or three places not approachable by land. Well on the Fleshwick side of Bradda is a cavernous opening occupying the inmost part of a recess between the two points. In this, and apparently confined to a very small space, is a colony of perhaps 150 Razorbills and Guillemots mixed. When I scrambled down to the low point called "Amulty," from which I could see the place, at a short distance, but across deep cavernous inlets, the birds streamed around in ceaseless circles in exactly the same beat, till the eye was weary of watching the constantly recurring procession.

On the high southern cliffs of the island and on the Calf, sea-bird life is more abundant and varied than elsewhere, the perpendicular-ledged faces about the Bay Stacka and the Sound, and the isolation of the Calf islet, offering the greatest facilities and protection to the true rock-breeders. I have already somewhat imperfectly described these colonies, and will not at present dwell further on them; they merit more minute investigation than I have ever been able to bestow upon them.

On the east the colonies are, as I have stated, more scattered. The most southern of these is a short distance from that well-known trippers' haunt, Port Soderick, but of the thousands whom the railway brings there very few row round the point of the Lhiack, or mount the abrupt rounded hill which marks the breeding-places, at least before such birds as local plunderers have spared have taken their departure. The colony is only of small extent, and shelters only Herring Gulls, with the usual odd Black-backs, a number of Shags which seem to leave in spring only their immature birds, and a non-breeding Cormorant or two.

From the summit of the high ground an apology for a track leads down, past great plants of Foxglove, so characteristic of Man, which in May have not yet displayed their rich spikes, over stony *débris* beneath overhanging juts of crag, to a shadowy recess all white with luxuriant beds of *Cochlearia*, emitting a faintly sweet scent. The water which makes this plant flourish so trickles from the cliff above, through the rubbish and rock-splinters half-

covered with a giant growth of dock, clumps of Hemp-agrimony, and the strange yellow-green of the golden Saxifrage. On the way down you pass scattered Gulls' nests, but to the right as you look towards the sea, they are thicker in a snug hollow but little above high water, and still further in the same direction you can see craggy shelves not accessible from below, where, on the broad slate ledges, the nests are placed against the sheltering rock. Underneath, as usual, where the ledges merge into sheer cliffs, are the Shags; but, as above mentioned, all mature birds seem to absent themselves here during the breeding season. From the topmost pinnacle is heard the harsh croak of the Raven, and the pair will keep watch, agitated yet defiant, until you are a mile away. Suddenly a Peregrine, with his magnificent flight, dashes through the crowd of Gulls. Far out over the slumbering sea he hastens, then turning, makes direct for the rock again, his sharp cry well distinguished amid their hoarse clamours. Rock Pipits, in their breeding plumage, delicately pretty birds when seen close, fly from stone to stone, amid the tangle-clad recesses near the water, and the bushy weeds higher up. Down in a hidden corner, where the bulging cliff-top yields them such a site as they love, a few Martins flit like butterflies. Unfortunately, this place is too well known to Douglas lads, and I fear few Gulls here bring off their clutches safely.

A few Herring Gulls nest at Wallberry, and on the seaward face of the stony desolate Barony Hill between Dhoon and Cornah a few more; at the latter place, on rocks not far above high-water mark, bare of vegetation, except for patches of Sea-pink, and sprinkled with little pools of brackish water. Maughold Head, the most eastern point of the island, with its curious humped outline and picturesque pinnacled stacks, adds to its singular beauty of outlook and its grey memories, the wild charm of sea-bird life. Most of the Herring Gulls here occupy a place to which they have given the name of Traie Foillan. In the caverned faces on the Ramsey side some Shags also nest.

A few remarks on some species, which, though not properly sea-birds, yet are often sharers of their stations, will not be out of place.

One such is the Grey Crow, *Corvus cornix*. At intervals pairs are scattered on the coast, and they are obtrusive on the attention of the most casual visitor. Their nests are often very

conspicuous. Though usually placed far out of reach of the spray, and often under protection of the highest cliff-ridge topping some brow, I saw one last year in a kind of gully, only some fifteen feet above high-water mark.

The Raven, *Corvus corax*, holds his own well on Man. During 1893 I visited seven nesting-places, and there are perhaps as many more. On May 9th I came upon two sites within a mile-and-a-half of each other. The first was above an unfrequented "traie," and exceedingly conspicuous, built on the back of a projecting and overhanging shelf, with a similar shelf behind it. It was only about twenty feet from below, and perhaps seventy from the top of the cliff, for this was here comparatively low. At one side a grassy brow ran up to a level with it, and I could make out at least one well-fledged young bird. Higher up was an old nest. The parents were very excited, and one of them kept constantly plucking dry grass from the ledges, and showering it around. The second site was on an immense perpendicular cliff, near the top; another nest lay on the same ledge at a few yards' distance, and a third a little higher up, forming a triangle. At this place also the pair of birds was in attendance. On May 14th I saw the young from another nest, which I have known for fifteen years, flying and scrambling among the crags in the vicinity of their birth-place. Even in winter the Raven does not entirely forsake its nesting-place. Thus on December 26th last I saw a pair at the usual spot.

Jackdaws are, in places, very numerous, often where no other birds frequent, as, for instance, on the brows between White Strand and Glen Mooar. I was, in 1893, disappointed in my hope of seeing much of the Chough, *Pyrrhocorax graculus*, in its narrowing limits, but in 1894 I met with it in several localities. Inexorable natural law, accelerated by the destructiveness of man, is, here as elsewhere, working out the extinction of this most graceful of the *Corvidæ*. Yet I think its scarcity must be somewhat over-estimated by the informant of Mr. H. A. Macpherson, who in his recently published 'British Birds' (p. 40), speaks of it as limited here to a few pairs. In 1890, in one of its localities, it appeared by no means rare. In the winter of 1893—94 some were seen on the sandy northern shores, to which they seem regularly to wander at that season. During the summer of those two years I met with them at six other localities, four of

which are doubtless breeding-places. These breeding-haunts at the present time are mostly remote and not easily accessible, and I may be excused for not particularizing them.

Pairs of Kestrels are located round the coast at short intervals. The rarer Peregrine frequents annually some of our finest headlands. The Rock Pipit is ever present, and pairs of the Stonechat enliven the gorze covers of the brows. I have already mentioned the Martin, *Chelidon urbica*. This bird is nowhere, I think, very common in Man, but visitors to Port Soderick may have noticed their nests clinging to the rock about the well-known "Smugglers' Caves," and a few may be met with at various other places of similar formation on the Santon and other coasts. In both 1893 and the present year a few nested on the gable of the pavilion of Derby Castle, Douglas, which is close to the shore and to the cliffs.

NOTES AND QUERIES.

MAMMALIA.

Marten in Co. Wicklow.—My attention having been called to an article in 'The Zoologist' of March last, under the heading of "The Marten in Ireland," in which the Editor requests further information relative to the haunts and habits of this beautiful animal, I have much pleasure in stating my experience, although the circumstances I am about to relate occurred so long ago as the winter of 1824. At or about that period several Martens were taken alive at Ballyarthur, in the county of Wicklow, under the following circumstances:—In the midst of a large oak-wood, nearly half a mile from the nearest dwelling, there was an octagon-shaped summer-house, one half being boarded at the back, about seven feet high, and thickly thatched with heather, the inside being ceiled, a space being left between it and the roof. In this secure, warm, secluded place the Martens took up their abode. The first intimation we had of their presence was seeing a hole in the thatch, about half-way up. We frequently heard them moving about in the roof, after remaining perfectly quiet for some time. This determined me to try and take some of them alive. I consulted our Scotch steward, who after a time had a large wooden box-trap made, open at each end, which answered the purpose admirably. By this means several of them were taken, and put into a clean hen-coop in the back kitchen of our house, with plenty of clean hay to keep them warm; in this they remained for several weeks. We fed them with birds, rabbits, &c.; the food was always eaten at night—never

touched in the daytime. So wild and untameable were they that on going near the cage they would rush about and never rest till we went away. On one occasion the steward on visiting the summer-house one evening, and when standing under the eave of the thatch, and near to the branch of an oak tree which extended close to the roof,—and which was the only way by which they could get on the house,—caught one when jumping off the roof to the tree, and, although severely bitten and scratched, held him till he took him to the house and put him into the cage with the others, having half-a-mile to walk with him, no other person being present. By degrees they all made their escape by gnawing away the boards of the coop. The last Marten that was taken at Ballyarthur was in 1872, when one was caught in a rabbit-trap during the winter of that year. I have no doubt there are Martens still in that locality. All those taken had the yellow throat and breast, and appeared to be fully grown.—H. L. BAYLY (Portland House, Ryde, Isle of Wight).

Barbastelle in Huntingdonshire.—Another specimen of the Barbastelle, *Synotus barbastellus* (see p. 187), was sent to me, alive, by Lady Ethel Wickham, on Sept. 4th. I find that this animal was captured in a cottage at Elton, and given to Lady Ethel for me by Mr. John Crisp, of Warmington. The village of Elton is in Huntingdon, though I believe that the boundary between that county and Northamptonshire runs within a few hundred yards of the cottage in which this bat was taken. I have therefore a scruple about claiming it as a Northamptonshire specimen. The individual in question was a female, and had a great deal of grey hair on the back and under-surface of the body. The former of these two animals alluded to above was of an almost uniform black-brown.—LILFORD (Lilford Hall, Oundle).

BIRDS.

Osprey in Bedfordshire.—On May 18th I visited Southill Pool, the only regular nesting haunt of the Great-crested Grebe in Bedfordshire, a pair of which, I am pleased to say, at that date, had a nest containing four eggs, which were eventually hatched, and the young reared. This pool I found was haunted by an Osprey, which stayed several hours in my company, searching for food, occasionally plunging into the water, but unfortunately at no time successfully. Now and again it rested on the overhanging trees surrounding the pool, sometimes amongst the thick green foliage, and at other times on some dead branch, from which a good look-out was easy. Nevertheless, the bird did not seem at all wild whilst on the wing. Twice it came within gunshot whilst I was standing in the open, and each time made one's blood boil (as the saying has it) to think of the keeper in the immediate background, to whom all pleading was in vain, and the Wild Birds Protection Act no intimidation. It is to be hoped,

nevertheless, that it will escape destruction.—J. STEELE ELLIOTT (Dixons Green, Dudley).

Hybrid Mallard and Sheldrake.—You may be interested to hear that a man in this county has this summer reared some young hybrids between the Sheldrake and Mallard. I hope to send you some further notes thereon by and by.—H. A. MACPHERSON (11, Victoria Place, Carlisle).

Occurrence of the "Cape Pigeon" at Bournemouth.—I was informed that a strange Petrel, pied all over, had been shot near the Old Harry Rocks, at Bournemouth, while it was following a foreign steamer. This was at the beginning of the present month. I have since received a photograph of the bird from Mr. Thomas Cooper, the birdstuffer of Poole, who had it to mount, and the bird is what I surmised it to be at the first, a "Cape Pigeon," *Daption capensis*. Pelagic birds, from all parts of the world, are liable to find themselves brought by accident to our shores, and the "Cape Pigeon," a well-known bird, is abundant in both the Pacific and Atlantic Oceans, and cannot be considered very extraordinary as a chance visitor.—MURRAY A. MATHEW (The Vicarage, Buckland Dinham, Frome).

American Goldfinch on Achill Island, Co. Mayo.—On Sept. 6th, while in Keem Bay, in company with some visitors to this island, I observed a small bird feeding on a thistle by the sandy beach. Its yellow colour and black head and wings made me think it might be an American wanderer, and, having my 12-bore with me, I easily secured it with a charge of No. 8 shot. It was in company with Linnets, Stonechats, and Meadow Pipits, and seemed quite at home, flitting about, and uttering a soft mellow note. After I had shot it, I was satisfied that I had one like it in my collection, namely, one that I shot in America in 1873. I immediately sent it to Mr. A. G. More, of Dublin, who identified it as the American Goldfinch, *Astragalinus tristis*. The migration of North American birds to Achill Head deserves attention, and on some future occasion I hope to deal with the subject more fully, as I consider Achill Head and Crougham great landmarks for migratory birds, as also the Blackrock Lighthouse, which throws its revolving light seawards for miles. I am convinced that many of the North American migrants visit our bold headlands, from the fact that I have observed and secured many of them in Achill. I should be glad to learn from any American naturalist how far north on the American continent the bird in question has been observed. So far as I know, this is the first example which has been taken in the British Islands. J. R. SHERIDAN (Dugort, Achill Island).

[Through the kindness of Mr. A. G. More, we have had an opportunity of examining the bird above referred to, which he has correctly named, and from the much worn appearance of the wing and tail-feathers—the latter especially being much abraded—we are decidedly of opinion that it had been not long previously in captivity. It is not unlikely that it may have

escaped from some homeward-bound vessel from New York, and found its way to land on the west coast of Ireland.—ED.]

FISHES.

Bonito in the Solway Firth.—A male example of the Bonito, *Thynnus pelamis*, was found dead upon the sands near Silloth on Sept. 15th. It was nearly buried in sand, but some Gulls had opened the belly and extracted part of the internal organs. The visits of the Bonito to the Solway Firth are rare. The only specimen that had been taken on the English side of the Firth previous to this was caught in September, 1856 ('Fauna of Lakeland,' p. 477). In the present instance the fish is estimated to have weighed about five pounds.—H. A. MACPHERSON (Carlisle).

NOTICES OF NEW BOOKS.

Birds of West Cheshire, Denbighshire and Flintshire. By W. H. DOBIE. Reprinted from the Proceedings of the Chester Society of Natural Science and Literature. 8vo, pp. 282—351. With folding Map. Chester. 1894.

THE last part issued of the Chester Society's 'Proceedings' is an exceptionally good one. It contains papers on geology, meteorology, botany, and zoology, most of them of local interest, and all of them instructive. That by Prof. T. M. Hughes, of Cambridge, on "Caves and Cave Deposits," explains very clearly their mode of formation, and the nature of the evidence upon which theories as to their age have been founded. Mr. Alfred O. Walker, to whose encouragement and support the Society is much indebted, writes on the climate of Chester, and of the north coast of Wales, as well as on the natural history of the district explored by the Society, extending to the sea-coast of Flintshire and Denbighshire, and including as much of Cheshire as lies west of a line drawn southward from Warrington. Mr. Newstead, the Curator of the Grosvenor Museum, Chester, contributes an excellent paper on the Heronries of Cheshire and North Wales, as well as a Preliminary List of the Mammals. In the latter we note his allusion to a record of Daubenton's Bat in the old copper workings at Alderley Edge, the reference to which he has forgotten. He will find it in 'The Zoologist' for 1893, p. 103, and in the volume for 1888 (p. 222), he will find another notice of the capture in Cheshire of the Whiskered Bat. Four

instances are noted of the occurrence of the Marten (*Martes sylvatica*, Nilsson) within the last few years in the Chester district. One at Eaton on the Duke of Westminster's estate on the 8th July, 1891; another a few days later on the rabbit warren near Hope; a third at Connah's Quay on the 14th April, 1892, and a fourth, a very large male, near Llanfairfechan about the 28th April, 1892. The measurements are given of three of these. According to Mr. Newstead the Dormouse has only been met with in two localities in the district, namely, at Thornton-le-Moors, and at Nant-y-glyn, Colwyn Bay. The Harvest Mouse is included with doubt in his list; while the Bank Vole (*Arvicola glareolus*) is stated on the authority of the Rev. C. Wolley Dod to be common near Malpas.

But the most important contribution to this part of the Chester Society's 'Proceedings' is that by Mr. W. H. Dobie on the "Birds of West Cheshire, Denbighshire and Flintshire," of which, as above noted, we have received a separate copy for review. It extends to seventy pages, and has a useful map.

As twenty years have elapsed since Brockholes' list of the Birds of Wirral appeared in the first number of these 'Proceedings,' it was time that some fresh effort were made to deal with the avifauna of Cheshire, and Mr. Dobie's contribution is therefore very acceptable. The district to which his observations relate includes a great variety of country both in regard to altitude, ranging from the coast up to 1850 feet above the sea, and to the character of both land and water. According to Mr. A. O. Walker,

It comprises one side of the estuaries of the Mersey and Conway, and both sides of the Dee, having large areas of sand and mud laid bare at low tide, and eminently adapted for the wading and swimming birds. In Cheshire there are ranges of hills of triassic sandstone, covered on their summits in parts with forest and heath, as is especially the case in Delamere Forest. The low grounds are for the most part pasture, and few fields are without old marl pits, now full of aquatic plants, and the haunts of Moorhens, Dabchicks, and other waterfowl. The two Welsh counties, though not possessing mountains equal to those of Carnarvonshire, yet form a land of hill and dale with large areas of elevated moorlands. Along the south-west side of the estuary of the Dee rises the carboniferous range of hills, which forms a continuous outwork to the older formations extending from the mouth of

the Vale of Clwyd to Llangollen. Behind these is the loftier silurian range, forming the eastern boundary of the Vale of Clwyd; and on the western side of this is a vast area of confused hills and valleys, also of silurian age, mostly moorland, and sparsely inhabited. These two ranges unite at the head of the Vale of Clwyd, and pass on southward to the furthest limits of Denbighshire, including in this area the beautiful Vales of Llangollen and the Ceiriog.

Nor is the climate much less varied than the physiography of the district. That of southern Cheshire is practically the climate of our midland counties generally; while that on the north coast of Flintshire and Denbighshire more nearly approaches that of Devonshire in its equable character; that of Chester and the low parts of Flint and Denbigh being intermediate.

Why is it (says Mr. Walker) that with all this variety of soil, altitude, and climate with sea-coast, estuarial mud flats, mountain, moorland, and cultivated land, the district of the Chester Society has not a richer *avifauna*?

The answer, we presume, must be that, compared with other counties, the number of observant ornithologists in Cheshire is limited, while, as Mr. Dobie has remarked, "the district happens not to lie in any of the great routes of migration." In this respect it cannot compare with the eastern counties which receive the great autumnal bird-wave from across the North Sea, and it even lies off the line of the west coast movement of land birds, which are said to make their journey between the Mull of Galloway and Anglesey by way of the Isle of Man.

The number of species recognised by Mr. Dobie on what he regards as fairly good evidence of their occurrence in a wild state is about two hundred and twenty, but of these a few seem to us to challenge objection.

In regard to the Nightingale, it is stated, on the authority of Mr. C. Wolley Dod, a good observer, that in 1889, in Lowercross Gorse in the parish of Tilston-by-Malpas, a Nightingale sang every night through May; and Mr. W. E. Sharp vouches for its having been recognised at Ledsham in 1893. Mr. Ruddy knows of no authentic instance of its occurrence in North Wales, and thinks the Garden Warbler has been mistaken for it.

The statement of a dealer (p. 291) that a pair of Bearded Tits were shot in September, 1893, "in a little ditch full of reeds between Hoylake and West Kirby," is so remarkable that we are inclined to think there must be some mistake about it.

The Marsh Harrier, being well-nigh extinct as a breeding species, it is of interest to note that a nest was found on the Berwyns in 1877, in which year one of these birds was shot on Moel Ferna; while the rarer Greenland Falcon was met with in April, 1876, when one was picked up dead, but in a perfectly fresh condition, on the Llanbedr Estate, Ruthin. It was thought to have been killed by coming in contact with telegraph-wires.

Mr. Newstead writes of the House Martin (p. 295):—"At Ince quite thirty pairs build their nests on rafters in the interior of a barn, and have done so for a number of years. The barn has a large opening without doors on the north side. Such a situation is quite the home of the Swallow, but I never heard of the Martin nesting in the interior of a building."

"The difference in habits of the two birds in this respect (says Mr. Dobie) may be connected with the fact that the Swallow, where there are no buildings, sometimes builds in caves, and presumably did so before the existence of masonry. The Martin in like circumstances builds on the face of rocks; but, so far as I know, not in caves." On this subject we may refer Mr. Dobie to 'The Zoologist,' 1882, p. 437; 1883, p. 34; 1884, p. 470 (between Conway and Bangor); and 1894, p. 124. There is also a record of Martins' nests on the basaltic N.W. front of Pen-maen-Maur ('Field Nat. Mag.,' 1833, p. 546).

In the Warrington Museum there is a specimen of the Spotted Sandpiper (*Totanus macularius*), which was shot, with one or two others, on the bank of the Mersey near Fiddler's Ferry, in May, 1863. It was formerly in the collection of Mr. Gregson; and Mr. Gurney considers it one of the six most deserving of credence out of twenty-six recorded occurrences in Britain. (See his 'Rambles of a Naturalist,' p. 262).

Mr. Ruddy's account of the foundation of a colony of Black-headed Gulls on a small moorland lake near Llanderfel, nine miles from Corwen (p. 343), deserves mention. Two pairs nested there for the first time in 1888. Ten pairs nested there the following year, and they were more than doubled in 1890; while in 1893 there was quite a large colony.

These are some of the more interesting items of information in Mr. Dobie's Catalogue, and it is to be hoped that its publication will give encouragement to others to extend the observations which he has so usefully collected.



The Weasel.
Mustela vulgaris.

THE ZOOLOGIST

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NOTES ON THE RABBIT, HISTORICAL AND GEOGRAPHICAL.

BY PROFESSOR HERBERT A. STRONG, M.A., LL.D.

THE oldest notices which we possess of the Rabbit, *Lepus cuniculus*, point to Spain as the country of its origin. The earliest reference to this animal in literature is to be found in Polybius (circa B.C. 204), who tells us that there were no Hares in Corsica, but that there were other animals (κύνικλοι) resembling Hares, which burrowed in the ground, and in addition there were Foxes and Wild Sheep (Moufflons). Ælian, who lived in the third century of the Christian era, tells us that he is no philologist, but that he has heard that the word is a Celto-Iberian—i. e. Basque-word; the Romans adopted the name with the animal, and called it *cuniculus*, which seems to have been a popular etymology from *cuneus*, a wedge, owing to the ease and rapidity with which these rodents made their way into the ground. Some of the ancient writers, like Varro and Pliny, thought that the Rabbit derived its name *cuniculus* from the military mines whereby towns were approached for attack; while other authorities, with more probability, inferred that the mine was called after the animal.* Of course the old English word “coney,” which also appears as “conyng,” and the old French words *connil* and *connin*, are derived from the same source, and the Romance words, like the Italian *coniglio*, all come from the original *cuniculus*. The question then arises whence came the word κύνικλος, which Ælian says he had heard was taken from the language of the Western

* Martial says Rabbits first taught men how to undermine towns, Ep. xiii. 60.—ED.

Iberians? The obvious resource is to turn to the Basque as spoken at the present day in Spain; and it appears that the genuine Basque word for a Rabbit is *unchí*. We must remember that this word has in the course of two thousand years probably undergone some mutilation, though to what extent we cannot tell. It may have been preceded by an aspirate, or a guttural; in any case, it seems likely that the Greeks saw in the Basque word enough resemblance to their word for a dog (*κύων*) to coin a bastard diminutive to express the strange animal which they hastily and popularly identified with the dog. The "Prairie-dog," or Marmot, we know to have been christened on this principle; and we know also how common it is for settlers in a new country to call unknown animals by the names of old-world species to which they happen to bear some fancied resemblance. The Greeks then will have called the Rabbit "the little dog"; the Romans, more practical, will have taken the name from the Greek, and by a false etymology called it "the splitter," as indeed they were accustomed to think of ploughing as "*findere terram*."

As for the name which the Rabbit has received in other languages (and it has received some very hard ones in Australia), it may be remarked that there is no native word for Rabbit in any Celtic language; and this fact points to its comparatively late introduction into Great Britain.* The Irish word *coinín*, Gaelic *coinean* (probably by popular etymology connected with the Gaelic name for a horse), the Welsh *cwning*, and the Cornish *cynin*, all seem, like the English *coney*, to be borrowed from the French *connin*. The Breton *koniel*, or *kounikl*, comes directly from the Latin *cuniculus*. The German *kaninchen* implies an original word *kanin*, which has passed into High German under different forms. It has passed into popular German under the form *küniclin*, and *künchel*, probably under the influence of *königin*, as if it were "the royal" animal. The Slavs, again, call the Rabbit, for some reason, *králik* or *krolik*, "the royal animal," the Slavish word for royal, coming probably from the name of Charles the Great. The Spanish *conejo* explains itself. The French word *lapin* is assumed to be a crippled form of "*clapin*," so that the original French conception of the Rabbit would be the "squatting" animal, which reminds us of the Greek designation of the Hare as the "cowering" animal, and I find that

* See 'The Zoologist,' 1883, p. 432.—ED.

Huloet defines a coney-earth as a "clapper for conies." The modern Greeks call Rabbits *κουνέλια*, a word obviously modelled on the Italian *conigli*. The Gypsies, tolerably close observers of nature, call the Rabbit *kanéngro*, the genitive plural of the Romani word *kan*, an ear. But the common word for Hare, or Rabbit, in all the European dialects of Romani is *shosho*, connected with a Sanskrit root signifying "to leap." For this information I am indebted to my friend Mr. Sampson, the Librarian of University College, Liverpool, who has lived much with the Gypsies, and were he not the most learned of librarians, would probably be king of the Gypsies at present.

The etymology of the word "rabbit" has been a matter of dispute among the learned. But it seems quite certain that the name was first of all applied only to the young of this rodent, and the termination is none other than the French well-known diminutive *-ette*, seen in *briquette*. In 'The Book of Nurture,' by John Russell, Marshal in the Hall of Duke Humphrey of Gloucester, A.D. 1424, we find directions given for carving "conies," and then for carving and serving up their young, which are called "rabettes." Du Guez (cited in Furnival's 'Index,' p. 74) gives as the French equivalent *lapereau*. The French use the word *rabouillère* for a Rabbit's nest; and it is possible that this may come from an older form of *rabou*, from Spanish *rabo*, meaning a tail, in which case the French may have merely adopted some local Spanish word, or a corruption of it, and the English may have received the word from France.

It would be interesting to know the exact geographical range of the Rabbit in Europe at the present day. I much mistrust the testimony of foreigners on such a subject. But an English sportsman tells me that he shoots Rabbits every year in Andalusia; that they much resemble the English Rabbit, but are smaller and leaner, especially about the head. An Italian sportsman says there are a few Rabbits in Sicily, and has promised to procure a skin for me.* A Greek gentleman writes me word that he has never seen any in Greece, and does not remember to have seen any in Corfu, but has been told that they are still to be found in a small island near Piræus called the Island of Komsúndouros.†

* In Italy there is no mention of the Rabbit before the time of Athenæus (A.D. 230), who observed it near Naples (Deipnosoph, ix, 64).—Ed.

† There are both Rabbits and Hares in the Cyclades, and their distribution is somewhat curious. See Erhart, 'Die Wirbelthiere der Cykladen; mit einer karte über die Verbreitung der Hasen und Kaninchen,' 8vo, Leipzig, 1858. See also Heldreich, 'La Faune de Grèce,' 8vo, Athens, 1878, p. 14.—Ed.

I never saw any in Norway, and was told of experiments which had been made to introduce them into the islands on the western coast, but the climate killed them off. There seem to be none in Russia, so far as I can learn. An old gentleman in Scotland states that in his boyhood there were no Rabbits to the north of the Tay; there are swarms at the present day; indeed on Handa there is hardly anything else, except sea-birds. Against this I must set the testimony of a Frenchman who lived in England in the year 1677, and who expressly states that there were Rabbits in the Western Hebrides. His book was published anonymously, and is called '*Mémoires d'Angleterre*'; in the same work he alludes to the ferocity of the Scotch Wolves.

It is well known what an unwelcome introduction Rabbits have proved in Australia and New Zealand. But I do not think that anyone who has not witnessed with his own eyes the appalling number of these pests can appreciate the terror with which settlers regard them. In Victoria they threatened to eat out the first settlers on the rich Western District, and the Messrs. Robertson, of Colac, spent over £20,000 in exterminating them. They imported Scotch rabbit-trappers and settled them in the now flourishing township of Colac. These trappers dug out as many burrows as they could, and blocked up others with masonry of solid brickwork, and in the end the Rabbit had to give way to the Scotchman. But it is needless to say that a number of rabbit-trappers is necessarily employed upon every Australian property situated in the neighbourhood of a Rabbit-infested district, and this constitutes a heavy tax upon the proprietors. None of the methods hitherto adopted against the Rabbits seem to have met with much success.* Foxes were introduced into the south of Victoria, but they seem to have come to the conclusion that it was easier to catch a Lamb than a Rabbit, and in this frame of mind have continued to multiply. Ferrets were turned out, but, in Victoria at least, were unable to stand the cold in the winter, and this is natural, for the stock of Ferrets is originally from the north of Africa, whence the ancient Spaniards introduced them to cope with their Rabbit plague, just as the Romans seem to have imported the Egyptian cat in order to cope with that late but dreaded importation, the Rat. Weasels are constantly being bought up and exported to Australia and New

* See '*The Zoologist*,' 1888, p. 321; 1889, pp. 143, 323; 1892, p. 377.—Ed.

Zealand (Zool. 1882, p. 21), ostensibly for the purpose of keeping down the Rabbits, but as they destroy many other native animals the wisdom of introducing them is very doubtful.

In the Mallee Country, in Victoria, which was a regular forcing-ground for Rabbits, some settlers had tried to grow a few vegetables round their house, and in order to prevent the incursions of the Rabbits, had roped round their patch of kail-ground, and fastened dogs at short intervals along the rope, so that they could slip along the rope as they required in order to catch the Rabbits. But the numbers were so great that the dogs soon ceased to look at them. A writer in 'Chambers' Journal,' on "Rabbit-land," has very truthfully shown that even rewards offered for the scalp of Rabbits were not always effective in inducing settlers to endeavour to secure the reward. The settlers, in one experiment, were to fix the amount of the bonus to be paid on each scalp, and the State was to pay back $4\frac{1}{2}$ d. of every 6d. which the settler thus expended. The rent paid per acre being almost *nil*, it paid the lessee better to maintain a good stock of Rabbits with the view of obtaining a revenue from scalp-money than to rear sheep and cattle. In another case a squatter paid rabbitters 2d. for each tail that they brought back to the house. In a short time a quantity of tailless rodents were seen running about the station paddocks. These were not, as might have been fancied, a new development of the genus Rabbit, corresponding to the Manx Cat, but simply the old Rabbits whose tails had brought in twopence each, and who were now turned out to propagate their race, so that the honest rabbitters should not be reduced to penury. Wire-netting is used on a very large scale; some of these fences are hundreds of miles long; but there is always a chance of Rabbits burrowing under such fences, or again of their being fenced in; so that such fences are at the best but an imperfect remedy. Poisoning wheat has been tried, but the Rabbits grew too cunning for the poisoners: M. Pasteur proposed, as is well known, to inoculate the Rabbits with the microbes of chicken cholera (*cholera des poules*).^{*} But no Government in Australia has seen fit to adopt his proposal, though I believe that experiments are still being carried out in a small island in Sydney Harbour. After all, a continent overrun with mad Rabbits would not be a very cheerful place of abode.

* See 'The Zoologist,' 1888, p. 321.—ED.

I have seen more parti-coloured Rabbits in Australia than I have ever seen in Europe. Near Queenscliffe numerous instances occur, not merely of white and black Rabbits, which are common, but of Rabbits with beautifully striped skins. I should think that rugs made out of such skins ought to fetch a good price.

It seems natural to suppose that as civilization and settlement progress, the Rabbits will gradually disappear, just as they have done in other countries. It is not until the tide of emigration turns towards Australasia that we can expect to find a steady diminution of these pests. It is much to be hoped that the working-men of all the Australian Colonies may one day show enough unselfishness and Imperial patriotism to wish to encourage the immigration of their poorer cousins of the Old Country into their Eldorado. The picture which M. O'Rell has lately seen fit to give of the Australian working-man is indeed calculated to give an extremely unfavourable impression of him to the Parisian *badauds*, and the charge which he brings against him of habitual drunkenness is quite untrue. But it is unfortunately true that there is a large party in Australia to whom the cry of "Australia for the Australians" means "We do not care to develop our resources if such development implies the importation of labour from over the seas." The Australian working-man is sober, and moderate in his diet, but it cannot truthfully be said that he takes much interest in what goes on outside his own colony. The best way to solve the Rabbit question, which is a vital one for the Australian working-man, would be to encourage the immigration of his British cousins to take the place of the rodents.

BIRDS OBSERVED IN MID-WALES.

BY HAROLD RAEURN.

DURING a few days spent in Wales in May last the birds given below were noted. The absence from the list of many common species of course does not imply that they do not occur in the district. The list is made up solely of species seen or identified by note in a rather hurried walk through parts of Montgomery, Radnor, and Cardigan. It is probably shorter, on

account of bad weather, than it would otherwise have been, and the observations were made almost entirely inland. No swimming birds were observed, with the exception of *Larus fuscus*, of which a single specimen, an adult in full plumage, was noted. The authorities are silent as regards the Redstart in Mid- and North Wales, but I found it a common, indeed abundant, bird in most of the localities which I visited. The Pied Flycatcher also appears to be pretty generally distributed. The presence of the Red Grouse on the *grassy* hills of Radnorshire is interesting, but probably it does not stray very far from the heather. The Dunlin, *Tringa alpina*, was not seen, but the Curlew, *Numenius arquata*, is thinly scattered, and the Golden Plover was observed in one locality. The Carrion Crow was abundant everywhere, but only a single pair of Ravens was seen. The country may be described generally as hilly, but not mountainous, with deep wooded valleys, the prevalent tree being the oak. Woods of considerable age exist in some parts, but the bulk consists of this century's growth, probably planted to replace those cut down for shipbuilding. The extensive damage done by the frosts and N.E. winds of May last was well seen in the oak-woods of the higher passes, where for miles the trees presented a mass of brown withered foliage as in late autumn. Some rugged "cwms" occur in places where the rocks appear through the sides of the hills, forming small precipices, often wood-girt; but the hill-outlines in general are smooth and flowing, sloping up to grassy or heathery moorlands, without dominating peaks such as are found north of the river Dyfi. Plynlimmon, 2469 feet, is the culminating height of the district, but it is a dreary elevated moorland, rather than a mountain.

The birds observed by me were:—

MISTLE THRUSH; THRUSH; BLACKBIRD.—Last two abundant.

RING OUZEL.—Not many; observed on the sides of the "cwms."

WHEATEAR.—A few seen on the hill-sides and "cwms."

WHINCHAT.—Several pairs by the roadside in the higher parts of the valleys.

REDSTART.—In many places one of the most conspicuous of roadside birds, haunting dry stone-walls, hedge-banks, and old timber on the outskirts of the woods.

ROBIN.—Common.

COMMON WHITETHROAT.—Common. The Lesser Whitethroat was not observed.

GARDEN WARBLER.—Fairly distributed, sometimes high up the valleys. Nest and eggs from West Montgomeryshire.

WILLOW WARBLER.—Common in most localities.

WOOD WARBLER.—Probably local; not heard, but nest with eggs and hen bird seen.

SEDGE WARBLER.—Fairly common.

HEDGE ACCENTOR.—Common.

DIPPER.—Only one seen, high up (Radnorshire).

GREAT TIT.—Common.

BLUE TIT.—Abundant. To a nest with young the old birds brought large green caterpillars.

NUTHATCH.—A pair had a nest with young in a hole in an oak at the height of about fifteen feet. The top of the entrance to the hole was slightly daubed with yellow clay mixed with small stones. The old birds were very tame, bringing food while I stood within a few yards of them. Their motions were Tit-like, yet they kept their bodies close to the bark, like a Creeper; the note was low and inward, and inaudible a few yards distant.

WREN.—Fairly common, and at some altitude.

PIED WAGTAIL.—Fairly common.

GREY WAGTAIL.—Only one or two pairs noted.

TREE PIPIT.—Observed in parts.

MEADOW PIPIT.—Usually at considerable elevations.

PIED FLYCATCHER.—Observed in three different localities. The birds always very tame, especially the males, which were very conspicuous, and the nests easily discovered. *Muscicapa atricapilla* in its general behaviour resembles *M. grisola*, but struck me as being heavier, slower, and not so restless. It often takes its prey from the ground, instead of capturing it on the wing—in this respect resembling the Red-backed Shrike in its motions. An attempt to syllablize the song is “tzit-tzit-tzit—tzui-tzui-tzui,” the last three notes very rapidly, almost in a trill.

SWALLOW.—Common.

MARTIN.—Not so numerous as the Swallow.

SAND MARTIN.—Only observed in one locality in Cardigan.

GREENFINCH.—Very abundant.

HOUSE SPARROW.—Very numerous. No Tree Sparrow was identified.

CHAFFINCH.—Very common.

LINNET.—Fairly numerous, ascending to 1000 ft.

BULLFINCH.—One, a male, seen in Montgomeryshire.

COMMON BUNTING.—Not numerous in any district.

YELLOW BUNTING.—Generally distributed and common.

STARLING.—One of the commonest and most generally diffused birds here as elsewhere throughout the British Isles.

JAY.—The only one seen was apparently a hen bird putting the finishing touches to her nest, which was built amongst the small twigs growing from the trunk of an oak; height from the ground, 8 ft.; above sea-level nearly 1100 ft.; the tree being among the last stunted stragglers on a steep hill-side.

MAGPIE.—One or two pairs only observed nesting.

JACKDAW.—Abundant in many places; nesting in hollow oaks in Radnorshire, and in the rocks above Falls of Mynach at Devil's Bridge, Cardiganshire.

RAVEN.—Only one pair seen.

ROOK.—Numerous, though perhaps less so than in most parts of England.

CARRION CROW.—One of the commonest and most conspicuous of large birds in most districts.

SKY LARK.—Observed up to 1800 feet.

SWIFT.—Very numerous, and generally distributed.

GREEN WOODPECKER.—Heard once only, but unmistakably, at the edge of an old oak wood in Radnorshire.

CUCKOO.—Common.

KESTREL.—Only one pair seen, nesting on small rock.

COMMON BUZZARD.—One pair, nesting on small broken rock. Nest a very slight structure, a few twigs thrown together and lined with tufts of grass and luzula, some fresh leaves of mountain ash strewed around; position very exposed and easily accessible, the usual tree in front and overhanging ledge wanting. Welsh name Barcud, which really means a Kite; in N. of England and Lowland Scots, Gled or Glead.

HERON.—Only one seen, in Cardiganshire.

WOOD PIGEON.—Numerous, some large flocks seen; two nests found in hazel and blackthorn thicket were both within two feet and a half of the ground.

STOCK DOVE.—Only one pair identified, first by note and female lifted off nest in an old oak-stump.

RED GROUSE.—Not abundant in districts passed through, as comparatively little heather grows there. It occurs sometimes on the grass at considerable distances from the heathy grounds.

PHEASANT.—Numbers of cock Pheasants were heard crowing in the woods; one in an oak thicket at over 1000 feet elevation.

PARTRIDGE.—Several pairs seen.

LANDRAIL.—Several heard.

WATERHEN.—One seen in Montgomeryshire.

GOLDEN PLOVER.—Two pairs, which had young, in Radnorshire, on watershed peat-bog.

LAPWING.—Common, and generally distributed.

COMMON SANDPIPER.—One or two seen.

OYSTERCATCHER.—Single bird seen from railway.

CURLEW.—Thinly distributed, and far from numerous.

LESSER BLACK-BACKED GULL.—A fine adult bird seen from the train inland.

THE AUTUMN SONG OF BIRDS.

BY O. V. APLIN.

WHY should some birds have an autumn song and others not? Let me explain what I mean by the autumn song. The birds' summer ends with their moult; I speak now of birds in general, without considering the exceptions, presented by Swallows, for instance. Some species become silent shortly *before* they moult in early autumn. They cease singing when they have done breeding, or as soon as their young have hatched. Others sing much later in the summer. After the song has ceased and an interval has elapsed, in certain cases, we hear it again. From mid-August on into November the second song may be heard. This is the autumn song. Some birds, if the weather be genial, strike up in November (or even in October), and may be heard all through the winter in mild weather; but this is not an autumn song, properly so called. It is the beginning of their ordinary song, which they will continue through the following spring. Such birds are the Song Thrush, Robin, Wren, Hedgesparrow, and Starling. The Great Titmouse and Mistletoe Thrush often begin their regular song in December. This must not be confused with the autumn song. Leaving out of the question this *late* autumn song—really the beginning of the

spring song before the old year is out—it seems that certain birds have an autumn song which is heard pretty regularly, while certain other species are never by any chance heard to sing at that season. It will generally be noticed that the autumn song is of very poor quality; that the strains are short and broken; and that it gives one the idea that the bird giving utterance to it is a beginner trying to sing. For this reason it seems likely that the autumn song is chiefly the production of young birds of the year, which, having completed their moult, find the year still mild and genial, and therefore try to sing. Still we are puzzled why some species should do so and others not.

The Mistletoe Thrush I have heard singing a few wild notes on Sept. 16th, and in fairly full song on Nov. 6th. It often begins its usual strain in December, and leaves off quite early. The Song Thrush I have heard singing feebly at the latter end of September and in October. The regular song is commenced sometimes as early as November. But I have never heard a Blackbird sing the autumn song. In some seasons this bird will sing into the latter half of July, but, unlike the Thrush, postpones the opening of his regular song until the new year. In the district in which I reside I do not find that he sings before February, and it is often the middle of the month before his mellow notes are heard. All three species of Leaf Warblers (*Phylloscopus*) have an autumn song. The Willow Wren, which, with a few exceptions, is silent soon after the middle of June, strikes up again about the second week in August. But the Chiffchaff, whose spell of spring song is very long, lasting from about the third week in March until the last in July sometimes, naturally does not open again so soon. It is heard in the last days of August, through September, and even into October in some years. The Wood Wren I have heard in August. But I never heard any of our best Warblers (Blackcap, Garden Warbler, or Whitethroats) sing in autumn; they sing well on into July, and in some cases to the end of the month. Neither have I ever heard any of the river warblers sing the autumn song. But I have a note from Mr. Warde Fowler saying that he heard the Grasshopper Warbler this year on Sept. 15th; I have heard it in summer as late as July 23rd. The Robin's autumn song is of course familiar to everybody. The broken strains we hear at first are most probably the productions of young birds just over their moult.

The Nightingale, being so nearly related to the Robin, it is rather curious that the young of this species do not sing; it appears, however, that they do not. They must moult before they leave us, for the young birds of this family wear the nestling plumage for a very short time only. But I know next to nothing about the Nightingale after it leaves off singing in June. I do not even know when it quits the country. During the recent meeting of the British Association at Oxford, Mr. Howard Saunders, Mr. Warde Fowler, Mr. A. H. Macpherson, and I were walking over Foxcombe Hill, on Aug. 12th, and saw a (young?) Nightingale for a moment. Mr. Saunders identified it for us; but that is the only one I ever saw in that month, to my knowledge. The old Nightingales are as chary as the Robins are lavish of their song; so perhaps we should not expect their young to make attempts at singing in autumn, like the precocious young Robins. I should like to know if the Nightingale is ever heard in autumn in its winter quarters.

Looking at the case of some birds, we might at first imagine that those species which leave off singing early in the summer sing again in autumn, while those which sing throughout the summer do not have a distinct autumn song. But too many exceptions occur for this to be laid down as a rule. For instance, every autumn I hear the Chaffinch trying to sing; the song is always very short, imperfect, and broken. I have heard it in August (once, on the 16th), September, October, November, and on one occasion in December (4th and 5th). The Chaffinch opens song regularly, sometimes in the last days of January, but more often in February. We should expect it to sing again in autumn, because in summer it is rarely heard much after Midsummer-day; but in the late season of 1888 I heard it up to July 19th.

On the other hand, the Yellow Bunting, which sings regularly on into August, does not have the autumn song, and is not heard again until it opens for the spring in late January, or more usually in February. The same may be said of the Corn Bunting. There are exceptions, of course; for instance, in the fine autumn of 1884, I once heard a Yellow Bunting singing on Oct. 28th. The Goldfinch may be heard in late September and October, but the song is not full; the Linnet on sunny October days. The Greenfinch I have heard in the latter half of August (once), and once on Dec. 1st. On a very

nice day on Nov. 29th, 1889, I heard a Bullfinch stringing three notes of its song together. On the same day a Ring Dove was cooing. Stock Doves and Ring Doves are both heard in early autumn, but they breed so late on in the season that we can hardly consider this as an autumn song. The Great Titmouse has the autumn song, and is heard sometimes in September and October. The Wren sings loudly in October, but this is probably merely an early opening of the regular spring song which goes on in fine weather all the winter. It is also difficult to say whether the vocal efforts of the Hedge Sparrow in late autumn are to be regarded as the beginning of the winter song or an instance of the autumn song—most probably the former. The Starling sings in October; but here again there is a difficulty in determining to which category its chattering notes and whistling should be assigned. The Sky Lark—notwithstanding it is a winter singer in bright, mild weather—has, I think, a real autumn song, being heard from mid-September on into October. I have only once heard the Pied Wagtail sing in autumn (*i. e.* on Sept. 30th, 1894); at the same time I must confess that I have not often heard it in spring. The only time I ever heard a Magpie distinctly trying to sing was on Oct. 10th; he sat in a thorn-bush jerking out a succession of queer and varied notes in the oddest manner.

The present short and incomplete essay is merely to direct attention to a subject which I think, if more exhaustively treated, might become a very interesting one. The remarks here offered are founded on too few facts. I have not even exhausted the material at my command; nor do I claim finality for any conclusions which I may seem to have drawn. I trust at some future time to return to the question.

THE REPRODUCTION OF THE LOBSTER.

By FRANCIS H. HERRICK.*

THE breeding habits of the Lobster, *Homarus americanus*, is a subject about which many conflicting statements have been made. These have resulted from insufficient observation, while much has also been written in ignorance of ascertained facts.

* From the 'Zoologische Anzeiger,' 1894, pp. 289—292.

The questions of most immediate interest are:—(1) when are the eggs laid? (2) What is the length of the reproductive period, or how often are the eggs produced? (3) what is the law of production, or the relation between the number of eggs and the size of the animal producing them? (4) how are the ova fertilized? (5) when do the young hatch? (6) what is the law of survival of the larvæ?

I have recently gathered some new facts which bear particularly upon the first of these questions, and clear away much obscurity which has surrounded it. Before giving these I will first point out the condition in which this subject has remained up to a very recent date.*

It at first seemed probable that the breeding season of the Lobster was not limited to a definite season of the year, but further study convinced me that this conclusion was erroneous, and in a paper published in 1891 the following statement was made:—"The spawning season is confined to the summer months, and the eggs which are then laid are carried by the female throughout the fall, winter, and spring, and are not hatched under natural conditions until the following summer" (Notes on the Habits and Larval Stages of the American Lobster, 'Johns Hopkins University Circulars,' vol. x., Sept. 1891).

Bumpus ('Journal of Morphology,' vol. ii., Sept. 1891) tells us, in his careful paper on the embryology of the Lobster, that "the eggs are normally deposited during the months of July and August." Eggs collected in winter at Nahant "were almost invariably in the same advanced stage of development—the eyes large and bright, the appendages well outlined, and the yolk occupying but a fraction, perhaps one-third, of the surface exposed." Of hundreds of Lobsters examined in May, 1890, at Woods Holl, Mass., "not a single one had eggs in early stages of development." Verrill ('Report upon the Invertebrate Animals of Vineyard Sound, &c.' p. 745) affirmed that he had examined Lobsters with freshly-laid eggs in December, and that the breeding season extends over a large part of the year.

The true answer to the first question propounded above seems to be as follows:—The majority of adult Lobsters extrude

* See "The Habits of the Lobster, and their Bearing on its Artificial Propagation" (Bull. U.S. Fish Commission, vol. xiii. 1893).

their eggs during the months of June, July, and August, but a considerable number—probably as many as 10 per cent. of the entire number which breed in the year—lay eggs during the fall, winter, and spring months. Careful systematic data have been collected by the U.S. Fish Commission during the past winter at Woods Holl, bearing upon this and other questions relating to the Lobster, and will be given in the detailed report now in the course of preparation.

Newly-laid eggs have been collected in the fall and winter on the coasts of Maine and Massachusetts. Microscopical examination showed them to be undergoing perfectly normal development from yolk-segmentation onward. Mr. Vinal N. Edwards sent me a number of live Lobsters from Woods Holl, Dec. 4th, 1893. One of these had external eggs, which had probably been extruded less than three weeks. At Eastport, Me., a female Lobster with partially discharged eggs was taken from a Lobster-car April 30th, 1894, by Mr. W. J. Fisher. In this case the eggs were laid in less than ten hours from the time the Lobster was placed in the car. About one-eighth of the spawn was under the "tail"; the rest was found in the body.

This production of eggs out of the summer months seems to be a perfectly normal process, although a somewhat unusual one; and it is possible that if the habits of many fish and other animals, with a fairly definite breeding season, were minutely studied, a similar variability would be found.

How often does an adult female Lobster breed? It had been supposed that the mature Lobster laid eggs at least once a year. In the paper already referred to I pointed out the important economic fact that the adult Lobster could not possibly breed oftener than once in two years, that annual breeding was out of the question, as was "abundantly proved by the slow growth of the ovarian eggs, by the immature condition of the ovaries at the time when the young are hatched, and by the large percentage of non egg-bearing females taken in the winter and spring." This fact was further established, upon the ground of anatomy, by dissections and histological examinations of a large number of individuals, representing every important phase in the growth of the ovaries. This is confirmed by Garman ('The Aquarium,' Jan. 1894, p. 91), who reaches conclusions similar to those already expressed.

The law of the production of ova may be expressed as follows:—The numbers of eggs produced by female Lobsters at each reproductive period vary in a geometrical series, while the lengths of the Lobsters producing these eggs vary in arithmetical series. According to this law we have the following:—

Series of lengths (in inches)	8	10	12	14	16
Series of eggs	5,000	10,000	20,000	40,000	80,000

An examination of nearly a thousand cases shows that this law usually holds good.

The question of fertilization of the egg is a very difficult one, and nothing is yet known of how the spermatozoon is conveyed to the egg, and penetrates its membranes. We know, however, that copulation takes place in the spring and summer months, and probably at other times of the year; that fertilization is effected outside the body; that the semen is stored in a peculiar pouch or receptacle, where it may retain its vitality for months, at least.

The eggs are carried, attached to the body of the female for a period of from ten to eleven months, that is, on the coast of Massachusetts, from the middle of July or the 1st of August to the middle of the following June. The period of fosterage undoubtedly varies considerably in eggs not produced in summer, some of which may hatch in the fall and possibly in the winter months.

Some Lobsters become sexually mature when they are eight inches long, while a relatively small number do not produce eggs until they have attained a length of twelve inches. The majority are mature when $10\frac{1}{2}$ inches long.

The law of survival of the larvæ I have discussed in a paper already referred to ('Bulletin of the U.S. Fish Commission,' vol. xiii. 1893). It is probable that the survival of two out of every ten thousand larvæ hatched is a high estimate, since the female of average size produces upwards of ten thousand eggs at a single laying, and may have the opportunity of reproducing more than once in the course of her life. The number of survivals must be less than the number of adults caught and destroyed each year, since the fishery is declining, and in some places has been destroyed through the persistence with which it is carried on.

Shortly after hatching her brood, the mother Lobster moults,

but does not produce eggs again until the following summer. Very rarely a female Lobster moults just before extruding her eggs. In such cases probably two moults intervene between the time of hatching of one batch of eggs and the extrusion of another.

Considering the fact that the American Lobster ranges through twenty degrees of latitude—from the southern coast of Labrador on the north, to Delaware on the south—there is perhaps less variation in the breeding habits than we should expect. In the north the eggs are laid somewhat later in the summer, and the period of fosterage is undoubtedly longer.

It is probable that when the habits of the European Lobster, *Homarus vulgaris*, are carefully studied, they will be found to conform in all essential respects with those of its American relatives.

THE WEASEL, *MUSTELA VULGARIS*.

BY THE EDITOR.

(PLATE II.)

It is surprising what confusion exists in the minds of most persons concerning British species of the *Mustelidæ* or Weasel family. The Stoat and the Weasel are frequently confounded, even by those whose daily avocations afford them constant opportunities of informing themselves. It has been our good fortune to visit at various times, generally in the shooting-season, nearly every county in England, and very many counties in Wales, Scotland and Ireland, and to have conversed with game-keepers "of all sorts and conditions" on the subject of the game under their charge, and the so-called "vermin" which they are in the habit of destroying; and we have been struck with the general want of knowledge displayed by them, either from lack of observation, or for want of such reliable text-books as would afford them the necessary information.

Owners or lessees of shooting, and indeed country gentlemen generally, would render good service, and indirectly do more good than the "School Board," if they would help their keepers and foresters to qualify themselves for a more efficient discharge of their duties by placing within their reach a few good books on Natural History with which to while away the winter evenings, and to amuse as well as instruct them. It so often

happens that the elementary education provided for the class to which we refer, proves of little use to them in the walk of life to which by choice or accident they are sooner or later called. Reading, writing, and simple arithmetic are of course taught, and are of course indispensable; but what information do they, or can they, possibly acquire, except by experience, very gradually and casually gained, on such subjects as the rearing of live stock; the management of deer; the breaking and training of dogs; the habits and natural food of the various wild creatures by which they are surrounded; the characteristic mode of growth and economic value of woodland trees; the cultivation of the kitchen garden, or the profitable management of poultry and pigeons? These are a few of the subjects on which a series of simple manuals might be usefully written and generally disseminated; and from the remarks which we have heard expressed, we do not doubt that such handbooks would be highly appreciated. But to serve any useful purpose they should be written in simple language, clear and concise, free from technicalities, yet as full of facts and practical teaching as possible. Were some such aid as this within reach of the class referred to, there can be no question that it would stimulate original observation and research, and, sooner or later, naturalists would be placed in possession of useful statistics which could be collected perhaps in no other way.

But to return to the Weasel (*A.-S. wesle*), the smallest of the *Mustelidæ*. The first thing that strikes us on looking at any animal of this family of the Carnivora, is the curious adaptation of their structure to their mode of life. The long snake-like body, short legs, strong yet supple neck, and large and powerful jaws, all combine to fit them admirably for pursuing, holding, and killing the creatures (often much larger than themselves) upon which they have to depend for their existence. So great also is their keenness of sight, scent, and hearing, combined with wonderful courage and activity (which extends even to climbing trees), that no wonder their victims, though equally fleet of foot it may be, seem paralyzed with terror on finding themselves pursued. And here it may be well to offer a few remarks as to the mode in which the *Mustelidæ* kill their prey. It is popularly believed that when a Stoat or Weasel seizes a Rabbit or a Rat, it severs some of the principal veins of the neck, and then hangs

on and sucks the blood like a leech. Others maintain that the first bite is always fatal, owing to the perforation of the spinal cord at the base of the skull. In the case of young rats and mice killed by the Weasel, this is doubtless true; their skulls are so thin that they may be easily crushed between the finger and thumb; but in the case of a larger animal like the Rabbit it is otherwise.

Some years ago Dr. Buchanan, of Glasgow University, contributed to the 'Annals and Magazine of Natural History' a paper "On the Wound of the Ferret," in which he showed that while small animals were killed by the brain being pierced, larger victims died rather from nervous exhaustion, and in no case was any blood-sucking observable. Mr. S. Woodcock, of Bury, also, writing in 'The Field' of Dec. 27, 1862, expressed a similar opinion, his experiments proving that the assailant does not retain his first grip as has been so often stated, but worries and tugs at the head and neck, so that the cause of death seems to be exhaustion and shock to the nervous system rather than the effect of any mortal wound. The late Mr. E. R. Alston examined a young Rabbit which had been rescued alive from a Stoat. No external injuries were visible, save slight blood-stains on the head and neck; but the poor beast was in a semi-torpid state, sitting with its eyes half closed and its head twisted to the left side. On being pushed, it moved one step in a helpless mechanical way, and then remained motionless again. *Post mortem* dissection disclosed a large quantity of clotted blood beneath the skin, and on this being removed the skull was found to be fractured in several places, and pressed in on the brain in a way which fully accounted for the powerless and stupefied condition of the animal.

After the prey is killed, the first tit-bit is usually the neck; sometimes the eyes are torn out and devoured; and then the carcase is dragged off and concealed near the habitation of the destroyer. The power which the Weasel has of bending the head at right angles with the long and flexible yet powerful neck, gives it, as Bell has remarked, great advantage in the mode of seizing and killing its prey. It also frequently assumes this position when raising itself on its hinder legs to look round—a very characteristic attitude, which has been well depicted by Mr. G. E. Lodge in the accompanying illustration (Plate II.)

It should be observed that the Weasel is a much smaller animal than the Stoat, averaging 7 in. or 8 in. in length, exclusive of the tail, which is about 2 in., as against 9 in. or 10 in. for the sexes of the Stoat, which has a tail of 5 or 6 in. invariably terminating at all seasons in a black tuft.

Weasels and Stoats hunt in family parties, and sometimes even in little packs, like hounds. The late Mr. E. T. Booth, in 'The Field' of 6th Oct., 1883, gave a most graphic description of an encounter which he once had in East Lothian with a pack of Stoats which attacked a terrier he had with him, and of which, with the aid of the dog and his breechloader, he killed a dozen or fourteen.

Richard Jefferies also, in his 'Gamekeeper at Home' (p. 121), has written from personal observation as follows:—

"Weasels frequently hunt in couples, and sometimes more than two will work together. I once saw five, and have known of eight. The five I saw were working a sandy bank drilled with holes, from which the rabbits in wild alarm were darting in all directions. The Weasels raced from hole to hole, and along the sides of the bank, exactly like a pack of hounds, and seemed intensely excited. To see their reddish heads thrust for a moment from the holes, then withdrawn to reappear at another, would have been amusing, had it not been for the reflection that their frisky tricks would assuredly end in death. They ran their quarry out of the bank and into a wood, where I lost sight of them. The pack of eight was seen by a labourer returning down a woodland land from work one afternoon. He told me he got into the ditch, half from curiosity, to watch them, and half from fear—laughable as that may seem—for he had heard the old people tell stories of men (in the days when the corn was kept for years in barns and so bred hundreds of rats) being attacked by these vicious little brutes. He said they made a noise, crying to each other, short snappy sounds; but the pack of five I myself saw, hunted in silence."*

The female Weasel is smaller than the male, and is no doubt "the little reddish beast not much bigger than a field-mouse but

* Other instances of Weasels hunting in packs might be quoted on good authority. See Atkinson, 'Zoologist,' 1844, p. 490; Shand, 'The Field,' 21st July, 1891; and Witchell, 'Fauna of Gloucestershire,' 1892, p. 20.

longer," which Gilbert White mentions as being called a *cane* * by the country people in Hampshire.

There seems to be a great disparity in the relative numbers of the sexes, or else the female is better able to take care of herself; perhaps her smaller size favours her concealment. However that may be, most keepers assert that they trap and kill many more males than females. It is stated by Bell, in his 'British Quadrupeds' (2nd ed., p. 187), that two or three litters are annually produced, but this appears doubtful, for, so far as we are aware, there is no evidence on record to prove that any of our native Carnivora breed more than once in the year.† The young, from four to six in number, are to be found in what may well be termed a nest, for it is generally a hole in a bank or tree-root, or in a stone or wall, lined with dry grass or leaves. The period of gestation is presumably the same as in the Polecat and Ferret, namely six weeks; but we do not know whether this has been definitely ascertained by keeping a pair in captivity. A young Weasel is very helpless for some time, and will remain where dropped by the parent if she is disturbed when carrying it, as she does, in her mouth. If the young are discovered before they are able to take care of themselves, the old one will defend them, and will courageously fly at the nose of any dog who presumes to look in upon them.

There is no reason why Weasels should not be kept in cages like Squirrels, for they make most amusing pets. They are extremely playful, and although at first their natural timidity causes them to hide a good deal, they gradually get over this

* *Cane*, a little dog, cognate with *canis*. In Surrey it is called *Kine*. In East Sussex it is known as *Beale*; in Yorkshire, *Ressel* or *Rezzel*; in Norfolk, *Mouse-hunter*; in East Suffolk, *Whitethroat* (male) and *Mouse-hunt* (female). Gilbert White, also, has another observation on this animal which is worth quoting. In his fortieth letter to Pennant, he writes:—"Weasels prey on Moles, as appears by their being sometimes caught in Mole-traps." The fact of their being caught in Mole-traps is vouched for by more recent writers (see, for instance, 'The Field' of 25th March and 8th April, 1882), but it is possible that the Weasel might be merely following the Field-mice which make use of the Moles' runs.

† Dr. Ritzema Bos, in his 'Tierische Schädlinge und Nützlinge für Ackerbau,' states that in years when field-mice are exceptionally abundant, there appears to be a second litter of young Weasels in the early autumn months.

shyness, and will come when called to take food from the hand. Their activity is surprising, and their movements are sometimes so rapid that the eye can scarcely follow them. This is especially the case when a Weasel is surprised in the open and chased by a terrier. If brought to bay they fight pluckily, and will hang on to the nose or lips of a dog with the tenacity of a terrier. Like Stoats they can climb well, and have often been seen to ascend trees many feet from the ground; and this not only when chased by an enemy, but from choice when in pursuit of prey. A Weasel has been found in a tree twelve feet from the ground, and has been even known to make its nest in a hollow tree. One was seen to jump from the top of a limestone pit into some water thirty or forty feet below, and swim across the pool. For both Weasels and Stoats can swim well; we have often seen them crossing a pool voluntarily. Sometimes they would carry a young one across, sometimes a dead field-mouse, holding it in the mouth as a cat would carry a kitten. On one occasion a Weasel was observed to cross a river at high-tide, where the water was fifty or sixty yards wide.

The Weasel, like the Squirrel, will catch small birds when he can take them by surprise, and will carry off eggs between his chin and fore paws, just as a rat will do. But his favourite and natural food consists of field mice, *Mus sylvatica*, in the woods and hedgerows, *Mus musculus* about the stacks and farmyards, and *Arvicola agrestis* in the open fields and pastures; while he will not hesitate to attack a rat, even if larger than himself, should occasion arise. So frequently have we witnessed his pertinacity in mouse-hunting that, on this score alone, we should be inclined to forgive him for carrying off a chicken. We would even go a step further. We have known stack-yards in which Weasels were repeatedly seen and left unmolested. Hens with chickens were daily pecking about the yard, but no chickens were missed. It appeared that, so long as the Weasels could get mice and rats, they preferred fur to feather. The late Mr. R. F. Tomes, of Welford-on-Avon, once kept watch from a place of concealment upon a nest of young Weasels, and saw the parent bring, in a little more than an hour, five field mice for her young, which were playing in and out of the hole. On her arrival with the fifth, he shouted and made her drop it, when, on picking it up for examination, he found it to be the Short-tailed Field Vole, *Arvicola agrestis*.

The utility of the Weasel in checking the devastation of field mice was never more clearly established than by the evidence which was tendered to the Committee appointed by the Board of Agriculture to enquire into the plague of Field Voles in Scotland in 1892.* In the Minutes of Evidence appended to the Report of this Committee issued in 1893, will be found numerous statements, elicited by cross-examination of the witnesses, which tend to prove beyond doubt that the Weasel is the natural enemy of field mice, and that no greater mistake could be made than to destroy Weasels where mice or voles are numerous, and are likely to become a plague.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Marten in Co. Westmeath.—Referring to your article on the "Marten in Ireland," in 'The Zoologist' for March last, you may be glad to know that I have found an entry in an old Game-book which has been kept at this house since the year 1814, to the effect that a Pine Marten was killed at Knock-Drin in the winter of 1845-46. The exact date is not specified; but it was on some day between October 23rd, 1845, and January 3rd, 1846.—H. C. LEVINGE (Knock-Drin Castle, Mullingar).

Dimensions of Otter.—I have read with much interest your articles on the Otter, *Lutra vulgaris*, which have appeared in 'The Zoologist,' and I have noted particularly your remarks on the size and gestation of the same. I have in my possession a dog Otter, which measures from tip of nose to tip of tail $56\frac{1}{2}$ inches. It was killed on the River Derwent, below Cockermouth, about forty years ago, by a man named Thursby, from whose daughter I purchased it. Anyone who would like to see it can do so by calling at my address.—JOHN R. DENWOOD (Kirkgate, Cockermouth).

Serotine Bat in Essex.—Nearly eleven years ago I had the pleasure of recording, for the first time in this county, the occurrence of the Serotine Bat (Zool. 1883, p. 173, and Proc. Essex Field Club, vol. iv., p. iv). Since that time the species has not again been met with in Essex, and the record still stands as the most northerly occurrence of the species in Britain. I am glad therefore to be able to add that, about 1 a.m. on Aug. 25th last, a fine

* See 'The Zoologist,' 1893, pp. 121-138.

male specimen entered my bed-room here by the window, which stood open to the extent of about two inches at the top. I made every effort to secure it, seeing that it was some uncommon species, but it was more than half-an-hour before I succeeded, and then only by a novel expedient. It proved an unusually large specimen. Its total length (tip of nose to end of tail) is $5\frac{1}{2}$ in., weight $\frac{5}{8}$ oz., and expanse of wing 14 in., thus equalling the ordinary dimensions of the Noctule in this respect. In colour it certainly did not answer to the description usually given of the Serotine. Nowhere was there any appearance of the "deep chestnut-brown" which both Bell (Mammals, p. 46) and Harting (Zool. 1891, p. 102) say usually distinguishes the species. The back was of a dark blackish brown, but the fur was tipped with yellowish grey, thus giving much the same "freckled" appearance as the silvery-grey tips of the Barbastelle. The under parts were of a smoky-grey.—MILLER CHRISTY (Pryors, Broomfield, Chelmsford).

CETACEA.

White-beaked Dolphin in Kilbrannan Sound, Arran.—On Sept. 1st a female White-beaked Dolphin (*Lagenorhynchus albirostris*, Gray) was captured in a singular manner off Dougurie, Arran, by John Galbraith, a fisherman, of Carradale. It measured 9 ft. 8 in. in length, and contained a fœtus about 4 ft. long. It was fortunately secured for the Kelvingrove Museum, Glasgow, by Dr. Dunlop, who, on Sept. 11th, furnished the following account of its capture to the 'Glasgow Herald.' This is so interesting that I think many readers of 'The Zoologist,' who do not see the 'Glasgow Herald,' may be glad to peruse the extract. On Sept. 25th the same man caught in his drift-net, near the same spot, a male of the same species, measuring 6 ft. 6 in. in length. This also was sent to the Kelvingrove Museum. From this and personal observations I am inclined to think that the species is not quite so rare as has been supposed, but is mistaken for a Porpoise, as specimens above mentioned were so called by their captor. — JOHN M. CAMPBELL (Curator, Kelvingrove Museum, Glasgow).

The account given by Dr. James Dunlop is as follows:—"On Saturday, Sept. 1st, at four o'clock in the morning, he drew his trawl-net at a point rather more than a quarter of a mile from the Arran shore, opposite Dougurie, a district in the island near to which the Duke of Hamilton has a shooting-lodge. Just before the bag of the trawl-net was got on board, it felt heavy to draw, and by-and-by the large tail of what was then thought to be an unusually big Porpoise was brought into view. With considerable rapidity and no little skill, a rope was hitched round its tail, and the form of the hitch was such that the stronger the pull upon the rope, the tighter the hitch became. Besides, the shape, size, and position of the tail favoured the non-slipping of the hitch. Getting the bag of the net rapidly on board,

the Dolphin got away with great force and speed, running out about twenty fathoms of cable of twenty-one threads thickness, not, however, before the other end was securely made fast to what fishermen term 'the timmer-head' of the smack. Mr. Galbraith, finding that the Dolphin was fast, at once took the helm, and soon he found that his smack was being rapidly towed through the water. As he had fully four miles of the Sound to cross before he could reach Carradale Pier—the wind, a slight breeze from the north-west, almost a dead head wind for him—he determined to try how far he could guide the Dolphin in the direction of home. Away went the Dolphin at a great speed, coming every now and then to the surface to breathe. At first it made a powerful effort to get rid of the rope which was securely fastened to its tail, so securely that the rope left a deep mark on the skin and flesh. It was observed by Mr. Galbraith that when it came up to the surface in its early efforts to breathe, a jet of water was blown up to a considerable height, but in the later efforts, when the towing of the smack had somewhat exhausted its strength, more of the head was above the surface and for a longer period, and that when it blew no water was thrown out from the blow-hole. This observation is corroborative of what has been stated by some naturalists, that Porpoises and Dolphins do not take in water by the mouth and eject it from the blow-hole in expiration—that the water thrown up in jets is merely the surface water which is over the blow-hole when it comes up to breathe. In the tow across the Sound, from the Arran shore to the Carradale side, the course of the smack was obliquely upwards, and some difficulty was at first experienced to get the Dolphin to go in a right direction. Sometimes it put on a spurt, turning its head down channel as if determined to make tracks outwards for Ailsa Craig. At other times it headed straight up channel, north and by east, as if it wished to get round Whitefarlan Point and to enter Lochranza. These tactics on the part of the Dolphin did not suit Mr. Galbraith's purpose, and with considerable skill he compelled it to tow him almost straight for Carradale Pier. He says that whenever the Dolphin headed down channel and put a strain upon the tow-rope, he put the tiller, not the helm, hard to starboard. The bow of his smack went rapidly to port, and going considerably to port the tow-rope, acting like a long lever upon the tail, turned the Dolphin's head up channel; and then, when it was going too much to the north, the tiller was put hard to port, which movement sent the smack's head more to starboard and the north than the Dolphin itself: this had the effect of putting the tail to starboard, and sending the head in the opposite direction. In driving a horse, the coachman, through the reins and bit, gets the horse to take the side to which the pressure of the bit in the mouth has been applied. Mr. Galbraith made his fishing skiff pull the tail the one way in order to get the head to take the other. In rather less than an hour the skiff was towed against the wind a distance of four miles,

much to the amazement of the men of the fishing fleet who were in the neighbourhood, who could not understand how, with neither sails nor oars, Galbraith's skiff was going fast yet dead in the eye of the wind. When the Dolphin and skiff reached within three or four hundred yards of Carradale the strength of the animal, which was observed to be flagging, suddenly gave way. It had been coming frequently to the surface to breathe, and seemed to have difficulty in getting down below the surface again. Mr. Galbraith, taking in the slack of the tow-rope sufficiently, got a purchase on it with block and tackle, and hoisted the tail upwards out of the water. This action deprived the Dolphin of its power. Its head went down below the surface of the water, and, after a short but violent struggle, it was drowned. For the remainder of the distance it was towed into the pier by the smack. About sixteen or seventeen hours after death it was in Glasgow, and examined by Mr. Eglinton, of the Kelvingrove Museum, who found that, owing to the exhaustion following great muscular effort and other conditions, the skin had begun to slide, due to rapid putrifying changes, and that it was unfit for preservation by stuffing, a matter of great regret to Mr. Campbell and others. The skeleton, however, is preserved. The calf is preserved whole in spirit, and is well worthy of examination."

BIRDS.

Autumnal Migration of the Meadow Pipit.—On October 16th, whilst walking along the shore at Emsworth, I noticed flocks of Titlarks, *Anthus pratensis*, in such numbers as I have never seen before, evidently on the point of migrating. I first observed them on the shore immediately in front of Thorney Island, which they covered in a brown mass. The different flocks, which were seen in several directions, must have numbered many thousands. Knox, in his 'Ornithological Rambles in Sussex,' gives an account of similar flocks near Brighton, early in September, and Mr. Borrer, in his lately published 'Birds of Sussex,' says that by the end of September most of them have departed for the winter. I think you may like to place my date on record, as it is apparently an unusually late one.—F. H. ARNOLD (The Hermitage, Emsworth).

Barrow's Goldeneye (*Clangula islandica*).—Writing of ducks, it may be of interest to record an attempt to rear the Iceland Goldeneye. Not being able to go to Iceland myself, I asked my friend, the Rev. H. H. Slater, to assist me. Mr. Halfdanarson kindly sent a man to Myvatn, where he procured twenty eggs of Barrow's Goldeneye, which were carried home and placed under three hens. Unfortunately one of the hens broke all the eggs in her charge. The other two hens only hatched out one duckling apiece, and these unfortunately soon died. Mr. Slater thinks that the shaking which the eggs received on horseback must have addled the majority of them. Perhaps some one else may be more fortunate in

experimenting in this direction, for Barrow's Goldeneye would be an interesting addition to the various species of wildfowl kept on ornamental waters in this country.—H. A. MACPHERSON (Carlisle).

Hybrid Mallard and Sheldrake.—I am sorry to report that the male Sheldrake, which paired with a female Wild Duck, was not the male parent of the young hybrids to which I referred (p. 396). Although the Sheldrake was observed to pair with the duck, he seems to have been unsuccessful. The eggs, it appears, were fertilised by an interloper, a Muscovy drake, entirely unknown to us. The young birds are fine healthy specimens of the cross between the Muscovy Duck and the Wild Duck. — H. A. MACPHERSON (Carlisle).

Baillon's Crake at Brighton.—On Sept. 2nd a good specimen of Baillon's Crake was caught by birdcatchers on the downs near the Ditchling Road, Brighton. It was brought to Messrs. Pratt & Son, where I saw it alive on the following day. On dissection it proved to be a nearly mature female. The base of the bill in life was greenish blue, and the breast is pale grey, beautifully and regularly barred and mottled with darker grey, but the chin is uniformly pale grey or almost white. The top of the head is a most beautiful fawn-colour, and the eyes very bright, the irides being fawn-coloured. In Saunders's 'Manual of British Birds' the adult male is said to have the base of the bill and the irides red. The white line on the outer web of the first primary is very distinct, but narrow.—A. F. GRIFFITH (15, Buckingham Place, Brighton).

Black-backed Purple Gallinule in Hampshire.—In 'The Zoologist' for 1866 (p. 229), the late Mr. H. Reeks, of Thruxton, recorded the capture of a Purple Gallinule at Redbridge, near Southampton. Happening to be in the neighbourhood, I thought it worth while to search this *Porphyrio* out, which, with Mr. Edward Hart's help, I did, and found it in the cottage of the man who shot it thirty years ago; but instead of being *Porphyrio caruleus*, as we expected, it turned out to be a specimen of the Australian Black-backed *P. melanotus*. The plumage showed no signs of confinement, but the bird was probably an escaped one nevertheless.—J. H. GURNEY (Keswick Hall, Norwich).

Nesting of the Lesser Redpoll in Bedfordshire.—As the Lesser Redpoll seems to have nested this year in greater numbers than usual in Somersetshire, it may add further interest to the facts to note the following for Bedfordshire. Previous to this year I have only been able to obtain information respecting one nest with eggs found in this county, and that many years ago at Shefford. But this year I was able to obtain two nests from the neighbourhood of Langford; the first contained one egg, on May 2nd, towards a clutch of five; the second nest was taken on May 12th, with five eggs. Since then a correspondent informed me that he secured a

clutch of six eggs of this species, on June 10th, near Bedford, and on the same day another nest with five eggs was found by a lad. Since then a third nest was taken with three eggs, all in the same locality. From these occurrences it appears that the Lesser Redpoll has this year nested in the midland and southern counties in greater numbers than usual.—J. STEELE ELLIOTT (Dixon's Green, Dudley).

American Golden Plover in Ireland.—On Sept. 13th I obtained a specimen of the American Golden Plover, *Charadrius virginicus*, amongst a lot of Golden Plovers, which had been sent direct from Belmullet, Co. Mayo. The bird is an adult, retaining a good portion of the black breast of the summer plumage, and differs from the European species in being longer in the tarsus, and having the axillary feathers smoke-grey instead of white, and a broad band of white over the eye. This species has not hitherto been detected in Ireland.—E. WILLIAMS (2, Dame Street, Dublin).

[The closely allied Asiatic Golden Plover, which is doubtfully distinct, has been recorded to have been met with on two occasions in Norfolk, *viz.*, in December, 1874, and again in the autumn of 1882, as well as in Perthshire in August, 1883, and in Orkney in November, 1887; but we do not remember any recognition of the American form in the British Islands, notwithstanding its exceptional occurrence in Heligoland, as noted by Herr Gätke. Some years ago we had an opportunity of examining and comparing a good series of the three recognised forms of Golden Plover, *C. pluvialis*, *C. fulvus* (vel *longipes*), and *C. virginicus* (or, as it is now called, *dominicus*), and of noting their differences and measurements (Proc. Zool. Soc. 1871, p. 116). The colour of the axillary plume in the Plovers has generally been relied upon as a good distinguishing character, being white in *pluvialis*, grey in *fulvus* and *virginicus*, and black in *Squatarola helvetica*; but Mr. Cordeaux has observed that in *pluvialis* it is not always uniformly white, but is occasionally more or less edged and broken with smoke-grey (Zool. 1869, p. 1544), upon which we suggested (*tom. cit.*, p. 1601) either that the Lincolnshire specimen, upon which his remarks were founded, might have been one or other of the exotic forms, or that the colour of the axillary plume, being variable, could not be relied upon as a specific character.—ED.]

Large Clutches of Eggs.—Seeing in 'The Zoologist' (p. 345) a note by Mr. Salter in regard to an unusual number of eggs having been found in the nests of the Marsh Tit (*Parus palustris*) and Willow Wren (*Phylloscopus trochilus*), I send you a list of some clutches (which I have in my cabinet, and also some I have seen), which contain more than the average number of eggs. I hope other oologists will relate their experience on this subject. The following amongst others I have in my collection:—A clutch of thirteen Coot (*Fulica atra*), from Aberdeenshire; seven Sand Martin

(*Cotile riparia*), from Perthshire; seven Bearded Tit (*Panurus biarmicus*), from Norfolk; six Hen Harrier (*Circus cyaneus*), from the Orkney Isles (six eggs seems to be the full complement for any hawk); a clutch of seven Starling (*Sturnus vulgaris*), a nest of seven and another of eight Redstart (*Ruticilla phæniceus*), all from a district near Bath; four Common Tern (*Sterna fluvialis*), from Dorset. I have also seen the following:—Twelve Marsh Tit, three Great Plover, four Arctic Tern, fourteen Blue Tit, twelve Great Tit; and six eggs in the following nests:—Rook, Starling, Jackdaw, Red-backed Shrike, Goldfinch, Dipper, Bearded Tit, Yellow Bunting, Swallow, Sand Martin, and a few of the commoner birds. Six, I think, may be considered to be above the usual number generally laid. I have never found more than five eggs in nests of the Blackbird or Thrush.—C. B. HORSBRUGH (4, Richmond Hill, Bath).

Supposed Occurrence of the Black Stork in Devonshire.—On April 3rd, about 2.30 p.m., two large birds were observed standing on a rock about twenty yards from the shore off Salcombe Cove, near Sidmouth. They looked like Herons in size, or a little larger, and on examining them with a binocular, the plumage was black or very dark, the beak red and long, and the legs red and long. My informant, an Eton Master, is no ornithologist; but on showing him the coloured plate of *Ciconia nigra* in Dresser's 'Birds of Europe,' he without the slightest hesitation recognised it as the species he saw at Salcombe.—EDWARD HAMILTON (16, Cromwell Place, S.W.)

Birds Nesting near Epsom.—The Stonechat nested this year on the common at Epsom, and several cases of the Hawfinch nesting in Newton Wood and in the neighbourhood were reported, one nest having fully-fledged young on June 3rd. This nest was near Mickleham, and contained three young birds. The Cirl Bunting was observed on May 13th near Mickleham, no doubt breeding, and the Wood Wren was watched in the same place. About four years ago a Bittern was shot, in a fog, on Epsom Common, and as I can find no evidence of its having been recorded before, I mention it now. It is set up, and in the possession of the person who killed it.—J. A. BUCKNILL (Epsom).

Great Snipe in Kent.—A Great Snipe (*Gallinago major*) was shot on Oct. 1st by Capt. Plumbe, Royal Marines, who kindly sent it to me. It was killed in the neighbourhood of Deal. — W. O. HAMMOND (St. Albans Court, near Wingham).

Grey Plover on the Yorkshire Moors in August.—Just after the Grouse-shooting had commenced at Thornton Moor, Wensleydale, a pair of Grey Plovers were most unexpectedly met with, and one of them was shot. This bird, a male, still retained the black breast indicative of the breeding season. The appearance of this species at such an unusual time of year

seems worthy of note. As a rule the Grey Plover passes through this country early in May on its way north to breed, returning early in October.—J. PERCIVAL (Carperby, Aysgarth, R.S.O.).

Woodcocks nesting in Co. Wicklow.—The following extract is taken from my diary, dated "Ballyarthur, Co. Wicklow," August 3rd, 1866 :—"When walking on a path in the wood with two of my brothers, in the afternoon, five Woodcocks got up close to us, two old and three young birds; they only flew a short distance, when they again alighted. The young birds were able to fly pretty well, owing to their apparent unwillingness to leave the locality. I think they must have been hatched close by." Old birds have occasionally been seen at Ballyarthur during the summer months.—H. L. BAYLY (Portland House, Ryde, Isle of Wight).

Albino Swallow.—At Winchelsea, last month, I saw what I had never before seen, though it may not be uncommon, possibly—an albino Swallow. It was pure white, without a spot of colour; the body snowy white, the wings a little less pure in tint. I watched it a long time flying around, and was much struck with its apparent size; it looked much larger than its dark-coloured companions. This note may interest you if—as I suspect it is not—a very common occurrence in the Swallow tribe.—JOHN LOWE (4, Gloucester Place, W.).

[White or nearly white varieties of the Swallow are not very uncommon. They are generally obtained in autumn, and are almost invariably young birds. See 'Zoologist,' 1880, p. 24; 1882, p. 372; 1885, p. 461; 1889, p. 418; 1892, p. 423; and 1894, p. 59. Many years ago (Sept. 1871), when in a gunning punt in Pagham Harbour, we shot a white Swallow as it crossed the bows in company with a flock of migrating Sand Martins, and, having skinned it, presented it to the Natural History Collection in the British Museum, where it is preserved. In October, 1892, a correspondent of 'The Times' gave an account of a white Swallow which had been captured near Westgate-on-Sea, and became tame enough to feed from the hand. The following summer we received a photograph of another, which was taken alive at York, and on two occasions we have noted cases in which the entire brood was white (Zool. 1880, p. 24; 1894, p. 59).—ED.]

FISHES.

Scorpæna dactyloptera on the Norfolk Coast.—In the Supplementary List of Norfolk Fishes, published in the 5th vol. of the 'Transactions' of the Norfolk and Norwich Naturalists' Society, at p. 635, Dr. Lowe, on my authority, includes *Sebastes norvegica* as a species new to the county of Norfolk. It is with great regret that I now find I was in error in determining the species of this fish, and that it is in reality an example of *Scorpæna dactyloptera*, Delaroche. I may mention that this latter fish was

quite unknown to me, and of course is not included in any of the books on British Fishes; but being in Edinburgh last August, Mr. Eagle Clarke gave me a copy of a paper which he had contributed to the Royal Physical Society on the occurrence of *Scorpena dactyloptera* on the Yorkshire coast, and I at once suspected that I had blundered in naming the Norfolk fish, which upon re-examination I found to be the case; but to prevent any possibility of further mistake, I sent the specimen to Mr. Clarke, who was good enough to confirm me in this respect. Of course, the occurrence of this species is of much greater interest than that of *Sebastes*, but nevertheless I regret the error. Fortunately it was only recorded in the 'Transactions' of the Norfolk Naturalists' Society, and if those who possess Dr. Lowe's list will kindly correct the name little harm will be done, provided that gentlemen will forgive my having misled him. — T. SOUTHWELL (Norwich).

The Bergylt off Whitehaven.—In August last my friend Dr. I'Anson, of Whitehaven, asked me to come and identify a fish, which he thought might probably prove to be a specimen of the Bergylt (*Sebastes norvegicus*). I accordingly went over to Whitehaven to see it, and was glad to be able to confirm its identification. It was caught off the Whitehaven coast at the beginning of August last, and is the first specimen that I have seen in the N.W. of England.—H. A. MACPHERSON (Carlisle).

[The Bergylt, or "Norwegian Haddock," as it is inappropriately called by the Aberdeen fishermen, for it has very little resemblance to the Cod-like fishes, is common enough on the Norwegian coast, and ranges northward to Greenland, but is not often recognised on the east of Scotland and England, and is still rarer on our western, or rather north-western, shores. The figure given by Couch in his 'Fishes of the British Islands' (vol. ii. pl. lviii.) gives a good idea of its form, though the colour is too brown. When fresh out of the water it is red, darkest on the back, paler on the sides, and the belly white.—ED.]

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 3rd, 1894.—The Right Honble. Lord WALSINGHAM, M.A., LL.D., F.R.S., Vice-President, in the chair.

Mr. Alick Marshall, of Bexley, Kent, was elected a Fellow of the Society.

Mr. W. F. H. Blandford exhibited specimens of a sand-flea, chigoe or nigua, received from Mr. Szigetváry, of the Imperial Maritime Customs, China, who had found them in the ears of sewer-rats trapped at Ningpo. Mr. Blandford stated that the species was allied to, but not perhaps identical

with, the American species, *Sarcopsylla penetrans*, L., one of the most troublesome pests in Tropical America and the West Indies to man and various domestic and wild animals, the female burrowing into the skin, usually of the feet, but also of any other accessible region. He said that the distribution of the chigoe was recorded over Tropical America and the Antilles from 30° N. to 30° S., and of late years it had established itself in Angola, Loango, and the Congo.

Mr. F. C. Adams exhibited a specimen of *Mallota eristaloides*, a species of Diptera new to Britain, taken by himself in the New Forest, on July 20th last. He said that the species had been identified by Mr. Austen, of the British Museum, and that he had presented the specimen to the National Collection. Mr. Verrall made some remarks on the species and on the distribution of several allied species in the United Kingdom. Lord Walsingham, as a Trustee of the British Museum, expressed his satisfaction at the presentation of the specimen to that Institution.

Mr. Tutt exhibited specimens of a form of *Zygæna exulans*, well scaled, and with the nervules and fore legs of a decidedly orange colour, collected during the last week in July by Dr. Chapman in the La Grave district of the Alps, at a considerable elevation; also specimens of the same species, taken by Dr. Chapman near Cogne, and others from the Grison Valley, which were less densely scaled. He also exhibited Scotch specimens, for comparison, and stated that he was of opinion that the latter were probably as thickly scaled as the continental ones; but that, owing to the differences in the climate of Scotland and Switzerland, collectors had fewer opportunities of getting the Scotch specimens in good condition.

Mr. P. M. Bright exhibited a remarkable series of varieties of *Arctia menthastri* from N. Scotland, also series of *Liparis monacha* (including dark varieties) and *Boarmia roboraria* from the New Forest; *Zygæna exulans* from Braemar; *Noctua glareosa* from Montrose and the Shetlands; *Agrotis pyrophila* from the Isle of Portland, and Pitcaple, N.B.; red varieties of *Tæniocampa gracilis*; and a specimen of *Sterrha sacraria*, taken at light, at Mudeford, in October, 1893; also living larvæ of *Eulepia cribrum*.

Mr. J. J. Walker exhibited a living specimen of a large species of *Pulex*, which he believed to be *Histricopsylla talpæ*, Curtis, taken at Hartlip, Kent. Mr. Verrall and the Chairman made some remarks on this and allied species.

Mr. K. J. Morton communicated a paper entitled "Palæarctic Nemouræ."

Lord Walsingham read a paper entitled "A Catalogue of the Pterophoridae, Tortricidae, and Tineidae of the Madeira Islands, with Notes and Descriptions of New Species." In this paper sixty-six species of Lepidoptera belonging to these families were recorded as occurring in the Madeiras, of which thirty were noticed as peculiar to the Islands, twelve as common to the Madeiras and Canaries (of which two were known as occurring elsewhere), and one extends its range only to North Africa. Over thirty species were

added to the list, and one new genus, seven new species, and two new varieties were described. Mr. Jacoby and Mr. Bethune-Baker made some remarks on the species and their geographical distribution.

Mr. Blandford read a paper entitled "A Supplementary Note on the Scolytidæ of Japan, with a list of Species."

October 17th, 1894.—H. J. ELWES, Esq., F.L.S., F.Z.S., President, in the chair.

Dr. H. G. Breyer, of Prætoria, Transvaal, South Africa, was elected a Fellow of the Society.

Mr. G. C. Champion read a letter, dated 15th August last, from Mr. J. Y. Johnson, of Funchal, Madeira, on the subject of a recent visitation of locusts to the island, and exhibited specimens. Mr. Johnson mentioned that Darwin, in his 'Origin of Species,' recorded that in November, 1844, dense swarms of locusts visited Madeira. He said that since then, until August last, these insects had not visited the island. Mr. Champion remarked that the species sent by Mr. Johnson was *Decticus albifrons*, Fabr., not a true migratory locust. Mr. Champion also exhibited specimens of *Anthaxia nitidula*, *Velleius dilatatus*, and *Athous rhombeus*, taken by himself in the New Forest during the past summer.

Mr. H. Goss read a letter he had received from Capt. Montgomery, J.P., of Mid-Ilovo, Natal, reporting vast flights of locusts there, extending over three miles in length, on August 31st last, and exhibited a specimen of the locust, a species of *Acridium*. Capt. Montgomery stated that, as a rule, his district, and most of Natal, was free from the pest, but that an exceptional invasion had occurred in 1850.

Mr. J. W. Tutt exhibited four typical specimens of *Emydia cribrum* from the New Forest, and, for comparison, four specimens of the variety *eandida* of the same species, taken at an elevation of 4000 feet, near Courmayeur, on the Italian side of Mont Blanc. He stated that he had also met with this form in the Cogne Valley, at an elevation of from 6000 to 8000 feet.

Mr. R. Adkin exhibited, for Mr. H. Murray, a specimen of *Erebia æthiops*, in which the last fore wing was much bleached, taken in August last, near Carnforth. Mr. Adkin also exhibited a series of *Acronycta rumicis* from Co. Cork, including light and black forms, with examples from the Scilly Isles, Isle of Man, and North of Scotland, for comparison.

Mr. Elwes exhibited a series of *Chionobas alberta* (male and female), *C. uhleri* var. *varuna*, and *Erebia discoidalis*, from Calgary, Alberta, N.W. Canada, collected in May last by Mr. Wolley-Dod. He said that the validity of *C. alberta*, which had been questioned by Mr. W. H. Edwards, was fully established by these specimens.

Prof. Poulton gave an account of the changes he had recently made at
ZOOLOGIST, THIRD SERIES, VOL. XVIII,—NOV. 1894. 2 L

Oxford in the arrangement of the Hope Collections in the Department of Zoology, and as to the rooms now available for students working at these collections.

Mr. G. T. Bethune-Baker communicated a paper entitled "Descriptions of the *Pyralidæ*, *Crambidæ*, and *Phycidæ* collected by the late T. Vernon Wollaston in Madeira."—H. Goss, *Hon. Secretary*.

NOTICES OF NEW BOOKS.

Notes on the Birds of Rainham: including the District between Chatham and Sittingbourne. By WALTER PRENTIS. Post 8vo, pp. 92. London: Gurney & Jackson. 1894.

THE author of this little book is not unknown to our readers, who will recognise his name as that of an occasional contributor to this Journal. We are glad to see that he has now published some more extended observations on the birds of the district in which he resides.

Rainham lies in the north-eastern parliamentary division of Kent, and within sight of the Isle of Sheppey, Queenborough, Sheerness and the Nore. Looking to the north-east, one may see the mouth of the Medway, the Isle of Grain, and, on a clear day, Southend in Essex. To the west and south, there is no view beyond the woods. The soil of Rainham is a good loam resting upon the chalk, more or less deep where the latter does not approach the surface, more or less thin near the woods, where the soil is flinty. Cultivation, Mr. Prentis tells us, is "going on as well as it can be done; almost everything that is either sown or planted grows as a rule to an average perfection."

From this it will be seen that the district is tolerably diversified, and with woods on one side of the parish, and marshes on the other, it is not surprising that there is also a diversity of bird-life. Many migratory species find at least a temporary resting-place in the neighbourhood, although naturally in these days of cheap guns and ten-shilling gun licenses, the larger kinds soon get shot or driven away. We regret to find Mr. Prentis enrolling himself amongst the local army of gunners, and admitting (p. 10) that he and his friends were instrumental in shooting at and driving away an Osprey, which for the time

being "escaped, taking a direct course up the river." How much better would it have been for the author to have used his influence to secure its protection, and to have pointed out to the game preservers in his neighbourhood that, so far as they were concerned, the Osprey, from its piscivorous habits, would not be likely to do any harm, while it would afford pleasure and instruction to those who, watching its fishing operations, take a keener interest in observing the actions of uncommon birds than in pursuing and slaying them. If our rarer birds are to be preserved from eventual extermination, it might well be through the efforts of local ornithologists. A very good example in this direction has been already set in Norfolk, and on the Farne Islands, and we trust it may be followed in other parts of the country.

We should like Mr. Prentis's little book better if he had told us more about the habits of the birds observed by him, their coming and going, the period of their stay, and particularly the food of the smaller species, which as an agriculturist he has evidently good opportunities for ascertaining. Instead of information of this kind, his remarks are too often limited to a mere record of a particular species having been seen or shot at a particular date. Occasionally, however, we come across something more interesting, as for example, under the head of "Montagu's Harrier" we are told that this bird "always comes to us *in the spring* of the year, unlike the Hen Harrier, which always comes *in the autumn*; that they take up their quarters in the woods, flying over the fields and low coppices till they are shot."

The Shrike which Mr. Prentis saw on the top of a faggot-stack, and which he describes as "a brown bird not unlike a Thrush" (p. 17), was surely not the Grey Shrike as he supposes, but a female Redbacked Shrike.

"The Bearded Tit," he says, "has not to my knowledge occurred in my district; but three were shot in a reed bed on the banks of the Medway in the winter of 1865 near Maidstone." Is this the latest instance of its occurrence in Kent? Mr. Miller Christy has chronicled its history in the adjoining county of Essex ('Birds of Essex,' 1890, p. 91); and it appears from the 'Reports on the Migration of Birds' (ix. p. 20) that one appeared at Landguard Lighthouse in the early morning of Feb. 16th, 1887,

and left at noon. This, however, is a long way further north, off the Suffolk coast.

Another noteworthy bird, in this case obtained by the author himself, is the Redthroated Pipit, *Anthus cervinus*, which was shot at Rainham in April, 1880. This is not the first record of the specimen however, and the author would have done well to have mentioned this, as also the fact that it was identified at the British Museum by Mr. R. B. Sharpe (*cf.* 'Zoologist,' 1884, p. 272).

The migratory habits of the Rook are thus noticed by Mr. Prentis (p. 43):—"Throughout the summer I see but few; when I begin to sow the wheat in the autumn they come by thousands, and continue doing so, off and on, throughout the winter, leaving soon after the barley is sown in the spring."

The migratory habits of the Greater Spotted Woodpecker also are alluded to (p. 45). "When they do occur, which is very rarely, they invariably come in the month of October; several have been obtained at that time of year, old birds, both male and female." The Lesser Spotted Woodpecker has been met with and obtained on several occasions in the lower orchard adjoining the marsh, a favourite locality both in autumn and winter.

An unusual site for a Gull Bunting's nest is described (p. 35): "In an old dried-up decoy pond, built on the ground amongst the dead stems of the reeds"; the writer adds, "they are sometimes caught by the bird-catchers in winter."

Mr. Prentis thinks that Magpies are kept down by foxes, because he "once found one which had been buried by a fox, leaving the tip end of its tail in view." Probably this was a wounded bird, or a tame one which had made its escape; it would take a clever Fox to catch a wild and uninjured Magpie.

The utility of Sand Martins in an unexpected direction is worth notice. The author once saw "about 300 of these birds all in a line upon a field of young turnips, sitting and fluttering along, devouring the fly and the turnip beetle." This, if we mistake not, is an original observation.

The Red-legged Partridge is said to have "spread within these few years all over the district," but Mr. Prentis need not have added the remark that "their habit of running before the dogs causes them to be of little use to the sportsman"; for it is well known that in districts where "partridge driving" is resorted to, the red-legged bird is considered invaluable.

A few typographical errors should be corrected, as for instance, *Saxicolo* (p. 24), Cole (p. 29), pipet (p. 33), *melanocephala* (p. 35), which is not the right name for the Reed Bunting, dikes (p. 48), scull (p. 59), gargany (p. 71), and *Podiceps* (pp. 76, 77), which, following Linnæus, should be *Podicipes*. This was pointed out by Professor Newton in a footnote to Babington's 'Birds of Suffolk,' 1886 (p. 200), and has since been generally and very properly adopted by ornithologists. The paragraph relating to the "African Whydah Finch" (p. 39) should be deleted, this bird having no possible claim to recognition as a visitor to this country, otherwise than through man's agency.

The Birds of Pembrokeshire and its Islands. By the Rev. MURRAY A. MATHEW, M.A., F.L.S. 8vo. Pp. i—lii; 1—131. With Illustrations and Maps. London: R. H. Porter. 1894.

THE avifauna of the Welsh counties has long stood in need of investigation by some skilled ornithologist, and Mr. Mathew has done good service by publishing the result of his observations made during eight years' residence in Pembrokeshire. Indeed, had not the accident of ill-health compelled him to sojourn there, on account of the healthiness of the climate, it is more than probable that we should still be without any connected account of Pembrokeshire birds.

It is scarcely correct, we think, to state, as our author does in his "Introduction" (p. xiii), that "there are no Welsh ornithologists who lived earlier than the present century." We have some dim recollection of having read in an early volume of the 'Philosophical Transactions' some letters by Edward Lhwyd, written about 1695, containing observations in Natural History made during his travels through Wales and Scotland; but writing at this moment amongst the beautiful woody vales and snow-capped peaks of Carnarvonshire, far away from all note-books, except the one in use, we are unable to state precisely the nature of the observations in question, further than that they had reference to, amongst other things, Blackgame, Storks and Crossbills in Pembrokeshire. The Stork has no place in Mr. Mathew's list, and the Black Grouse has long been extinct,

though the precise date of its extermination in the county has not been even approximately ascertained. Within the memory of man an attempt has been made to re-introduce this fine game-bird into a county where the discovery of its bones has proved its former existence, but hitherto the experiment has been unsuccessful. The Black Grouse has also disappeared apparently from several districts in South Wales, where it was once common. Its former abundance, says Mr. Mathew, is supposed to be attested by the number of inns scattered about bearing the sign of the "Blackcock." This, however, may either testify to the presence of the bird, or only to its heraldic representative, as the Blackcock is the old crest of the Mathew family, at one time owning large estates in various parts of South Wales. It forms, therefore, a most appropriate device on the cover of the volume before us, with the Welsh motto, "Y fyn Duw a fydd," which signifies, as we are informed, "What God willeth will be."

We were not prepared for the information that it is doubtful whether the Red Grouse is still a native of Pembrokeshire, for we had supposed that the Precelly ridge of hills, which stands out so prominently to the north of the county, would surely yield at least a limited annual supply of these much-coveted game-birds. Indeed, rumour indicates their presence still, on the Cardigan-shire side of the Precelly range.

Amongst the characteristic birds of Pembrokeshire, it is satisfactory to note that on the cliffs along the coast, the Buzzard, Peregrine, Raven and Chough are still to be met with, together with the less noticeable Rock Pipit and Wheatear. In the north of the county we learn that the Hen Harrier still quarters the wilder moors. The Water Ouzel and the Grey Wagtail are common on every mountain stream, and have for their companions the Ring Ouzel and the Common Sandpiper. The Stonechat may be seen on every common and is one of the characteristic small birds. The Cuckoo and the Nightjar rejoice in the wilder parts of the country, where as summer visitors they are said to be exceptionally plentiful; while the Linnet, Yellowhammer, and Chaffinch are very abundant. Amongst the soft-billed summer migrants, the Chiffchaff and the Sedge Warbler seem to be the best represented, the former occasionally remaining through the winter. A walk in spring across any extensive common is sure

to be enlivened by the strange "humming" of the Snipe, which breeds in many places throughout the county. Our Author calls the sound "drumming," as do many other writers, but we prefer the term "humming," not only because it seems to indicate more exactly the nature of the sound produced (as we are quite convinced) by the vibration of the flight-feathers, but also because the name "mire-drum" is, or was, by common consent, locally bestowed upon the Bittern, in former days resident wherever there were meres and reed- and rush-grown bogs for it to skulk in, and doubtless a common Pembrokeshire bird. In the summer many of the cliffs along the coast, and most of the islands, are thronged with sea-fowl, amongst which the Gannet and Manx Shearwater are remarkable as having breeding-stations in but few other places in the kingdom.

But in reviewing the Pembrokeshire avifauna, it seems to us that the chief interest centres in those species which are conspicuous by their absence; bearing in mind the western position of the county, and the fact that many of these absentees are unknown also in Ireland. According to Mr. Mathew, the following species which are common in most of the English counties, as also in Central and Eastern Wales, are either never seen, or are extremely rare in Pembrokeshire, and of those marked with an asterisk not a single example has been known to occur:—Redstart, *Nightingale, Lesser Whitethroat, Garden Warbler, *Dartford Warbler, Wood Wren, *Reed Warbler, Nuthatch, Ray's Wagtail, Great Grey Shrike, Red-backed Shrike, Pied Flycatcher, Hawfinch, *Tree Sparrow, *Mealy Redpoll, *Twite, Cirl Bunting, Wood Lark, Great Spotted Woodpecker, Lesser Spotted Woodpecker, Wryneck, *Osprey, *Grey Lag Goose, Black Grouse, Spotted Crake, Stone Curlew, and Dotterel.

Of these the Reed Warbler, the Garden Warbler, and the Lesser Whitethroat, appear to be very rare throughout Wales, as they are also in the south-west of England.

It is curious that the Yellow Wagtail is only seen in Pembrokeshire as it passes in spring and autumn, there being no instance on record of its having remained to nest. The number of species ascertained to breed in the county is 113, but since the commencement of the century three others have ceased to do so, namely, the Kite, the Marsh Harrier, and the Black Guillemot.

Not the least interesting portion of Mr. Mathew's book is that section of his "Introduction" (pp. xxxv—xl) in which he deals with the subject of migration, and the Reports from the Pembrokeshire lighthouses, all of them well situated; the "Smalls" in particular, which from its position fifteen miles out at sea, in the centre of St. Bride's Bay, where it is almost exactly opposite to the lighthouse on the Tuskar Rock, that stands seven miles off the Wexford coast, might afford valuable statistics respecting the passage of birds between Pembrokeshire and Ireland. The lighthouse on the South Bishops Rock off St. David's peninsula, the two lighthouses at the entrance to Milford Haven, and the tall lighthouse on Caldy, are all important stations from which the returns are of great interest. Such lighthouses as those in Cardigan Bay, on the Smalls, and on Lundy, are of special value from their isolated position so many miles from land, where they must necessarily attract birds that make their aerial journeys well out at sea. In fine weather the birds fly wide of, or high above, the lighthouses; but in stormy or misty weather, they flutter about them during the night and the early hours of the morning in a bewildered manner, and hundreds perish from dashing themselves violently against the lanterns.

Mr. Mathew states, however, that he is quite unable to arrive at any beyond the most general conclusions, as the materials for forming any adequate theory are as yet far too scanty from the returns supplied. They serve nevertheless to reveal the fact that several species commonly regarded as residents are to be included amongst the birds which periodically migrate.

The position of the Pembrokeshire lighthouses, as well as those at a distance, which doubtless influence the direction of the migrating flocks, is clearly shown on a folding map at the end of the volume, while another map of the county indicates most, if not all, of the localities which are referred to in the text. The accompanying illustrations, from photographs of some of the more notable haunts of sea-fowl in Pembrokeshire, furnish a most appropriate embellishment to a well-planned and very well-written volume.



Attitudes of Little Bittern. *Botaurus inornatus*.



Harvest Mouse.
Mus Messorius

West, Newman imp.

THE ZOOLOGIST

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ON A NEGLECTED SPECIES OF BRITISH FIELD MOUSE,
MUS FLAVICOLLIS, MELCHIOR.

BY W. E. DE WINTON.

THIS species of Field Mouse, described in 1834 by Prof. Melchior, of Copenhagen, on page 99 of his work on Danish and Norwegian Mammals,* has hitherto been disregarded by British naturalists, although several writers, under *Mus sylvaticus*, have mentioned that “a larger variety measuring $4\frac{1}{2}$ inches, exclusive of the tail, is sometimes found in woods”;† but beyond this they do not go. Field Mice answering the description of Melchior’s *flavicollis*, being abundant in some of our English counties, I think this animal should find a place in the list of British mammals; and for my part I quite agree with Melchior that it is a perfectly distinct species, since, apart from its size and colour, the special characters of the skull, hereafter to be described, sufficiently entitle it to that rank.

In the first place I will describe its outward appearance, and show how it can be distinguished from *Mus sylvaticus*.

The full-grown animal measures as follows:—Head and body, 108 to 115 mm. Tail, 108 to 115 mm. (the greater measurements not necessarily belonging to the same animal, but the head and body and tail measurements of each individual will generally be found within 5 mm. of one another, sometimes the head and body, sometimes the tail, giving the longer measurement). Hind

* ‘Den danske Stats og Norges Pattedyr,’ 8vo, pp. xvi. 298, pls. 13.

† Cf. Jenyns, Man. Brit. Vert. An. 1835, p. 31.

foot, 24 mm. Ear, 18 mm. For the purpose of comparison, I will here give a few measurements of *Mus sylvaticus* and *M. flavicollis*, adult mice with worn teeth, and young in the grey plumage. All figures are in millimetres, and taken from specimens in the flesh by myself. The ear is measured from the notch, and the length of the hind foot does not include the claw. The measurement of the head and body + the tail may be relied on as giving the total length of the animal.

	MUS SYLVATICUS.				MUS FLAVICOLLIS.			
SEX, <i>ad.</i>	♀	♀	♀	♂	♀	♀	♂	♀
Head and body .	93	92	92	97	108	110	110	115
Ear	17	16	17	17	18	18	18	18
Hind-foot.....	22	22	22	23	24	23	24	24
Tail	86	82	78	85	108	115	112	112
SEX, <i>juv.</i>	♂	♂	♀	...	♀	♀	♂	...
Head and body .	83	83	71	...	81	84	68	...
Ear	16	16	16	...	16	16	16	...
Hind-foot.....	22	21	20	...	21	22	20	...
Tail	75	79	59	...	84	83	60	...

All the specimens above measured were caught within an area of thirty acres, but the species did not intermingle; yet there was no natural boundary or observable difference in the soil on which they were found.

In comparison with *Mus sylvaticus*, the general colour of the upper parts in *M. flavicollis* is brighter, especially along the sides and legs, and the under parts of almost pure white, excepting the gorget or breast-plate of clear yellowish brown (from which it takes its specific name); this band is about 8 mm. broad, passing across the chest, immediately in front of the fore legs, with a cross or longitudinal stripe in the centre extending forward about 5 mm., and back along the sternum about 10 mm., where it is entirely lost, unlike the slight dash of colour so frequently found on the chest of *Mus sylvaticus*, and which varies from the smallest spot on the breast to a decided yellow-brown tinge extending over the whole belly.

The richer colouring of the upper parts in *Mus flavicollis*, and the pureness of the white on the under side, with the very

distinct line of demarcation, give this mouse a peculiarly striking appearance; it is almost as beautiful as a Squirrel. Its large ears and wide-open prominent eyes, its long tail, and hind feet are fully as much developed in proportion to its size as in *Mus sylvaticus*, consequently the measurements are greater.

Now as to its structural peculiarities. The tail is made up of 30 vertebræ, whereas in *sylvaticus* I have never found more than 27. In the skull the differences are not easy to describe—the measurements being so minute—and are hard to work out, owing to the difference in the size of the respective skulls; but the skull of *M. flavicollis* is readily distinguished from that of its near ally by its greater length, which is usually 29 mm. in the perfectly clean skull. This may be only in proportion to the larger size of the animal, but it is a longer-, narrower-, stronger-looking skull; the point of the nasal bones where they join the frontal is sharper, and—what is a far better character—the angle of the suture of the frontal and parietal bones is more acute; the superciliary ridges are well developed, while in *sylvaticus* they are hardly noticeable even in the oldest individuals. The orbito-temporal fossa, or all the space between the zygoma and the skull, is longer and narrower; looking at the skull from above and behind, and likening it to a vase, the “shoulders” are much more sloping. The dentition is the same as in *M. sylvaticus*.

The bright fawn-coloured band across the chest distinguishes *M. flavicollis* at all ages and in all seasons, though in the plumbeous-coloured young naturally the colour is not so bright; still the more or less chestnut-tinged dark band is quite noticeable in the smallest mouse that is ever likely to be caught in a trap.

The general habits of this mouse are similar to those of *sylvaticus*; there may be slight differences, but I am not prepared just now to fix them.

The distribution of this mouse seems to be very local, and the localities in which it occurs are widely separated, not occurring, so far as I know, apart from *sylvaticus*, yet never crossing, as I believe, or even mixing with that species.

At first I was inclined to describe this mouse as peculiar to Herefordshire, it being particularly abundant around Graftonbury in this county, and also at Bishopstone in the same county, where, in 1885, three specimens, now in the National Collection, were obtained by Mr. H. N. Ridley.

Among two or three hundred skins of Wood Mice, mostly in the Collection now being formed by the efforts of Mr. Oldfield Thomas from all parts of the British Isles and Europe, not one of this species occurred, until about a month ago one appeared among some skins sent from Oundle by Lord Lilford, and further search showed that there was another specimen in the Museum Collection from Tharand, in Saxony. This latter specimen clearly proved that the larger variety casually mentioned by continental writers should also be referred to this species.

When I thought I had come to the end of all literature on European mice, I happened to come across Schiödte's 'Zoologia Danica' (1878—93), and turning up *Mus sylvaticus* I found mention of a form called by Melchior *Mus flavicollis*, as stated in the commencement of this paper, and on referring to Melchior's work I saw my mouse described and fairly accurately figured in a coloured plate.

Sixty years have elapsed since this species was described and named, and yet it seems to have been entirely overlooked, a fact which only shows how little work has been done in regard to the smaller mammalia, and how necessary it is to see a good series of specimens, such as I have already alluded to, when working out a species. I am proud to say that I have already contributed largely to this collection, and now add my fine series of *Mus flavicollis*.

The peculiarities of the skull undoubtedly are only those we should expect to find in a giant race, but seeing that they seem constant in the adults, and that the colour variation shows itself in the immature pelage, I think we have quite good reason to give this mouse specific rank. The distribution, of course, is the puzzle; had this mouse been an isolated form, or confined more or less to a certain area, there would have been no question of the species being valid; but these problems we must endeavour to solve, and there certainly is no question that Melchior's name and work should no longer be left unnoticed.

I trust these remarks may be the means of showing how much we have neglected our own small mammals, and I hope before long to make known more interesting facts relating to the local forms and distribution of other species.

In conclusion, I may add that *Mus sylvaticus* still fights the

battle of life against the number of prowling cats and two-legged enemies in our London parks, though in appearance it hardly comes up to country form, and a friend has shown me some very fair specimens recently taken at Fulham.

[Mr. de Winton has been good enough to show us several skins of his *Mus flavicollis*, with others of *Mus sylvaticus* for comparison. There is certainly a remarkable difference in size; but we have so frequently observed such variation in the size of individuals of the same species (just as with man himself), that we consider measurements go for little; while the other points of difference relied upon are so slight (the dentition being admitted to be identical), that it is doubtful whether they are of specific value. In a review of Melchior's work which appeared, soon after it was published, in Wiegmann's 'Archiv für Naturgeschichte,' 1836, p. 76, the editor expressed his decided opinion (p. 78) that *Mus flavicollis* of Melchior was nothing but a large variety of *M. sylvaticus*, and subsequent writers on the subject seem to have been satisfied with this opinion. The subject, however, is one that deserves reconsideration, and Mr. de Winton does well to bring it once more under the notice of naturalists.—ED.]

THE WEASEL, *MUSTELA VULGARIS*.

BY THE EDITOR.

(Concluded from p. 423.)

ONE of the witnesses, David Glendenning, who had been a shepherd at Coom for eight years, on being asked by the Chairman of the Committee above mentioned whether he had ever seen a Weasel kill a Vole, replied:—

“Yes; about three weeks ago I came upon a small brown Weasel which had killed five in one of the sheep-drains. I followed it up, and found it killing a sixth. A week past, on Sunday morning, I came down a drain for 250 yards or so. A Weasel had been before me, and there were twenty-two dead Voles in the bottom. I secured a specimen last night, in order to show you the way a Weasel destroys a Vole. The blood is entirely drawn from behind the left ear. There is not a bit of the Vole marked otherwise, except by the tooth-marks on the head. All those I have seen were killed in the same way” (222).

On being asked whether the Stoat and the Weasel eat the flesh of the Voles they kill, he replied:—

"I once saw a Stoat eat a Vole entirely, leaving nothing but the inside (*i. e.* the entrails). In a general way they only suck the blood. They have to be very hungry before they meddle with the flesh" (224).

Another shepherd, John Inglis, of Ropelaw Shiel, on being asked to what cause did he attribute the plague of Voles then existing, replied:—

"We think it is on account of the Weasels being so very sorely killed by the game-tenant's keepers. That has allowed the Voles to breed to such an extent" (273).

James Hope, a shepherd at Medlock, after describing the way in which Weasels and Stoats were caught in box-traps for exportation, was asked whether he considered it a mistake to allow them to be caught on the ground and sent out of the country. He answered:—

"Yes, certainly: I consider it a great mistake when it has come to what it is" (referring to the plague of Voles).

"Q—Because you consider they do so much good in killing Mice, I suppose? A.—Yes" (1104-1105).

Mr. John Morton, tenant farmer at Nether Abington and Elvanfoot, remarked:—

"We are always glad to see a Weasel about the farmhouse. I insisted upon the keepers protecting them near the buildings, because they killed the Rats about the stackyards" (1255).

Asked, "Do you advocate importing Weasels?" he replied:—

"Yes; I think that is one of the best things we could do. I would willingly pay my share of the expense of importing them, if they could be got anywhere. I have not seen a Weasel on my farm for some time. On the neighbouring farm to mine I know that about half-a-bushel of Voles were found lying dead round about the hole of a Weasel's nest" (1259).

Mr. James Wallace, a tenant farmer, of Auchenbrack, thought that "had the Weasels been as plentiful as formerly, the Voles would not have been so numerous" (1972).

These are half-a-dozen specimens out of nearly a hundred answers given by local witnesses on hill-farms affected by the Vole plague, 1891-92.

Yet, notwithstanding the usefulness of the Weasel in killing Mice and Voles, as deposed to by so many witnesses, there are others who give orders for their destruction on the plea of their

killing game. For instance, Mr. C. J. Massey, of Galloway House, Garlieston, Wigtonshire, made the following admission (1710):—

“Since I went to Galloway House I have taken a particular note of all the vermin killed, and for that purpose I have a ‘vermin-book,’ which the keepers fill in, and bring a return to the head gamekeeper every week. It is sent to me monthly, and I can see for myself from it how many have been killed. We killed last season (1891–92) 556 Weasels at Galloway House, and I believe that fully one-fifth were Stoats, the remaining four-fifths being little Weasels.”

It would seem, however, that the Weasel is sometimes blamed for the work of the Stoat. Andrew Watson, a gamekeeper in Teviotdale, admitted that “Weasels will not stop much up on these high ranges,” where Grouse are. They are down on the sheep-farms where the Voles abound, and where there is little or no game, and about the farmsteads or “shielings,” the haunts of Rats and Mice. It is the Stoat which lives in the loose stone walls on the higher ranges, and which preys chiefly on Rabbits, which (according to the head keeper of the Duke of Buccleuch at Drumlanrig) “are to a certain extent over most of our moors, and where they are, the Stoats prefer them to Voles.”

The head keeper of the Duke of Buccleuch at Langholm, Mr. John Kerss, having about 100,000 acres under his charge, was asked (908):—

“When you use the word ‘Weasel’ do you apply that term in the generic sense, including both the larger Stoat and the smaller Weasel?—Yes.

“Do you mean to say that the smaller one of the two is destructive to game?—Yes; to a certain extent, but not to the same extent as the larger one.

“Would you not say that the smaller animal hunts Rats and Mice in their runs?—Yes; it goes under the name of *Mouse-hunter*.

“Then you would not consider it so destructive (to game) as we have been led to infer?—Not nearly so.”

Both Weasels and Stoats were admitted by several witnesses to be very useful in keeping the stock of Rabbits down within reasonable limits. One witness, Mr. John Borland, of Auchencairn, over whose farm Weasels had been exterminated, said, “For the last ten years we have had an annual plague of Rabbits, and there is not a single Weasel left to prey on the young broods of Rabbits.”

It is satisfactory to know that this state of things is being altered; that a reaction has set in in favour of the Weasel, as well as of the Kestrel; and we have it on the authority of Mr. John Bell, head gamekeeper to the Duke of Buccleuch at Drumlanrig, that he "had instructions from his Grace *not* to kill Kestrels and Weasels, which instructions, of course, have been strictly adhered to" (2059).

In the granary and the straw-yard, as the late A. E. Knox has well observed,* "the Weasel is eminently useful, far more efficient than a cat, and a worthy ally of the White Owl. Indeed, besides the quantity of Rats which it destroys, even during a temporary sojourn in such situations, a still greater number of those noxious animals are frequently induced to migrate from the spot where it has once firmly established its quarters."

The *modus operandi*, or we might say *venandi*, in the case of the Weasel, has been accurately described by Dr. Ritzema Bos, in his 'Tierische Schädlinge und Nützlinge für Ackerbau.' He says:—

"Chiefly during the night—especially in abundant mouse-years—but also to some extent in the day, it is busily occupied in catching Field-mice. As soon as the slender little carnivore creeps into a mouse-hole, the terrified rodents may be seen springing up, as if possessed, from the neighbouring burrows; but the Weasel has speedily seized a mouse by the throat, and has bitten into the arteries of the neck, so that it may taste the blood of its victim. Inasmuch as the Weasel, like other members of the Marten family, only eats its prey when in need (being usually satisfied with merely drinking its blood), it requires many Field-mice for its daily food. There thus comes upon it a delight in killing, so that even when satiated it still goes on killing for mere pleasure. Hence it is that a single Weasel may easily destroy two dozen Field-mice, or it may be more, in the space of one day. When the Weasel has young, it drags many dead mice into its nest. As destroyers of Field-mice, the Weasels excel over other similar animals of prey—firstly, by their far greater number; secondly, by their slender, snake-like, active bodies, which enable them to search as no other animal can for the Field-mice in all their holes and burrows; and, thirdly, by the circumstance that they continue the destruction of mice through the winter."

The Weasel appears to be more sensitive to cold than the Stoat, and during hard weather keeps to the shelter of the rick-

* 'Gamebirds and Wildfowl,' p. 256.

yards and farm-buildings, wood-stacks and old hedge-banks, where there is plenty of thick undergrowth. On the 3rd January, after a sharp frost the previous night, we found a Weasel lying dead and frozen on a fallow field, where, prompted to hunt by hunger, it had succumbed to the severe weather.

Although in this country the Weasel does not turn white in winter like the Stoat, it does so in the north of Europe, and in its white garb is the *Mustela nivalis* of Linnæus. Occasionally albino specimens have been met with, but must be considered rare.

In 'The Zoologist' for 1866 (p. 384) Mr. T. E. Gunn reported the capture of an albino Weasel in Norfolk, and in the volume for 1868 (p. 1186) Mr. Cordeaux stated that "a white Weasel, probably an albino, had taken up its quarters in an oat-stack in his yard." In 1879, the late Mr. Gurney, of Northrepps Hall, Norwich, mentioned one which was killed there in Nov. 1878, "evidently assuming a white winter coat, a circumstance which is very rare in the Weasel, though not uncommon in the Stoat. The front and sides of the head were already quite white, and white hairs were appearing amongst the brown ones in all those parts of the animal which are normally brown, and especially on the flanks and tail" (Zool. 1879, p. 30). On Sept. 27th, of the same year, the late Mr. F. Bond obtained "a pure white Weasel, full grown, a true albino with pink eyes. It was killed by a dog in Soham Fen, Cambridgeshire" (Zool. 1879, p. 455).

In 1884, Mr. J. J. Brigg, of Kildwick, near Leeds, reported the capture, in the latter part of November of that year, of "a Weasel perfectly white, including the tail, and the eyes a dull pink" ('The Field,' 5th Jan., 1884); and in Oct. 1889, Mr. Corbin, of Ringwood, saw a perfectly white Weasel, which had been caught by a man cutting faggots in the New Forest. It proved to be a male, and a true albino with pink eyes (Zool. 1889, p. 449). In addition to these, we have seen in the collection of Mr. Borrer, of Cowfold, near Horsham, a pure white Weasel which was killed at Willoughby, in Leicestershire, during the winter of 1867.

Referring to the change of colour which takes place in the Stoat in winter, Bell states (Brit. Quad., 2nd ed., p. 196), that "this is effected not by the loss of the summer coat, and the substitution of a new one for the winter, but by the actual change of colour in the existing fur." On the other hand, the late

Henry Wheelwright, better known as a writer on Natural History under the signature of "The Old Bushman," has asserted just the reverse, stating that he had proved it by keeping specimens in confinement.* This was also the opinion of the late Edward Blyth, one of the most experienced zoologists of modern times. On this subject the reader may be referred to an interesting communication "On the Colours of Arctic Animals," published by Prof. Meldola in 'Nature' of April 2nd, 1885 (p. 505).

In Bell's work, which for want of a better still remains the text-book on British Quadrupeds, nothing is said about the absence of the Weasel from Ireland. The late Mr. Andrew Murray, in his 'Geographical Distribution of the Mammalia' (p. 114), says the Weasel *formerly* inhabited Ireland, but is no longer found there. Macgillivray states that it is "generally distributed in Ireland";† but Thompson‡ says he has never met with it there, nor does he consider that it has been proved to be a native, though it may be so. On the other hand, the Stoat, which is called the Weasel in Ireland, is common there. The late Col. J. J. Whyte, of Sligo, a well-known sportsman and excellent out-of-door observer, writing on this subject in 'The Field' (July 11th, 1874), observed:—

"I am aware that it is the right thing to say that we have no Weasels in Ireland; *certainly*, I never saw an animal of the sort without the black tip to the tail. Many of them,—I may say most of them,—however, are so small, that a man who does not profess to be a naturalist is left in doubt whether he is not looking at a Weasel with a black tip. I have one before me now, an old bitch, giving suck,—whose size is exactly that given by Bewick as that of the Weasel, — $7\frac{1}{2}$ in. from nose to tail; tail 2 in., brush $\frac{3}{4}$ in. I do not remember ever seeing any so small in England, though common enough here, as well as the larger size."

Another correspondent, resident at Acomb, near York, on the 5th Dec., 1885, on his return from Ireland wrote as follows:—

"Whilst travelling in County Mayo last summer, I found the Weasel —by name at any rate—very well known on the west coast, and held in great respect by the peasantry, to whom no greater offence could be given

* 'Ten Years in Sweden,' 1865, p. 219.

† 'British Quadrupeds,' in Jardine's 'Naturalists' Library,' vol. vii. p. 164.

‡ 'Nat. Hist. Ireland,' vol. iv., pp. 6, 7.

than by killing one, as I was told by a gentleman sportsman, native of the country, they, in the remote parts, believing that the Weasels were the Cats belonging to the country when the Danes held sway over it; but I made no enquiry whether the Weasel was properly so called, or its near relative, the Stoat."

In July, 1887, the following letter was received from Mr. Charles Meldon, of Woodpark, Scariff, Co. Clare:—

"Sir,—My attention was arrested, when reading 'The Field' of Saturday, by a note of yours (annexed to a letter headed 'A Trap for Weasels'), stating that it is doubtful if the Weasel exists in Ireland, and suggesting that the Stoat is the animal which is mistaken for it. Now I am in a position to throw some light on this interesting subject. Living in Ireland, and having had ample opportunity of becoming acquainted with the enemies that attack game, I can state that until last Sunday week (July, 1887) I never saw in Ireland what is known in England as 'the Stoat.' My knowledge of this species of vermin is extensive, inasmuch as for some years past I have had a shooting in Hants, where Stoats abounded until my keeper got rid of them. The Stoat is very much larger than the Weasel, much coarser, with a black-tipped tail, and emits when hunted or annoyed a most pungent stench. The Weasel is much smaller, finer in the head, sharper-looking, brighter and more piercing eyes, easily attracted by imitation of the cry of the Rabbit, and, so far as I am aware, it does not emit the same fearful stench as the 'Stoat.' Of the smaller animal called the Weasel I have seen (caught and shot) hundreds in Ireland; they are very numerous. The Weasel in Ireland, as in England (where I have also met with a large number), follows and destroys Rats, which the Stoat (so far as I am aware) does not do. As before mentioned, Stoats and Weasels were numerous at my shooting in England, and I am well acquainted with both animals and their habits. I have shot all descriptions of game in Ireland, and have seen hundreds of what are called Weasels in England, but have never seen a 'Stoat' until last Sunday week, when I killed one under most peculiar circumstances. Having recently taken a shooting here, where there are a fair number of Rabbits, I came to reside a fortnight ago. On my return home, on the day named, one of my servants reported the presence of a strange animal in the dining-room. Having proceeded there, I killed a medium-sized Stoat, the skin of which I preserved as a curiosity, as never having seen one in Ireland. When hunted, the Stoat emitted and filled the house with the stench peculiar to the species. From enquiries I have made about it, also because of the Rabbits not being so numerous as they should be, and from their habits, which are in some respects peculiar where Stoats abound, I believe that there are Stoats here; but I have not seen any except the one I killed. I have seen and shot

several Weasels, however, during the past few days. The skin of the Stoat I killed measures, from snout to tip of tail, 19 inches. I shall be glad to send you the skin, as also the carcase, of a Weasel, if you care to have them.

“With reference to Mr. Johnston’s letter, I may mention that the Stoat or Weasel is easily attracted to a trap by suspending over it a bait in the shape of part of a Rabbit, or dead Rat, or other strong-smelling piece of an animal, the more stinking the better. Indeed this is the usual way of catching both these animals. I fancy Mr. Johnston will find such a bait equally attractive as the dead Weasel.—Faithfully yours, CHARLES H. MELDON (Woodpark, Scariff, Co. Clare), 12th July, 1887.”

Replying to this communication, we pointed out that no proof had been hitherto afforded by any one that the Weasel was a native of Ireland, and urged the desirability of procuring specimens in order to set the matter at rest. To this letter came the following reply:—

“Thanks for your letter. I will send forward some specimens of the Weasel family as soon as possible. Frequently when one wants a specimen delay occurs in securing it. I will, however, do my best. Since writing my last letter, a gentleman in the neighbourhood, who comes here from England, tells me that Stoats are numerous here, as also the *Mustela vulgaris*.”

Notwithstanding this kind assurance, no Irish specimen of *Mustela vulgaris* has yet come to hand.

Another correspondent, Mr. Samuel Coventry, having taken up ‘The Field’ while at Galatz, in Roumania, and noticed the editorial remark above referred to, wrote as follows:—

“I see there is still a doubt as to whether the Weasel occurs in Ireland. I think both the Weasel and the Stoat exist there. I lived in the County Cork from 1851 to 1867, and with my terrier I came across several Weasels, as I thought, and one Stoat. The Weasels were light brown, but the Stoat was chocolate-colour with a black tip to its tail. I also saw what I considered a Weasel at Ballina, on the top of a wall, as I was riding one day. The Stoat I killed with terriers after a tremendous hunt. Friends of mine have also considered they killed Weasels in the Co. Cork. You are at liberty to publish this if you like. I have no doubt of the existence of the Weasel in Ireland.—SAM. COVENTRY (Galatz, Roumania).”

The most positive evidence which has hitherto been tendered on the subject is that of our friend Mr. Borrer, of Cowfold,

Sussex, who, writing in 'The Zoologist' for 1877 (p. 291), stated as follows:—

"On the 5th Nov. last, when visiting a friend in the Co. Mayo, I saw a Weasel one afternoon hunting about a stone wall at Currawn, near Achill Sound, and, as I watched it for some time at the distance of only a few yards, I could not possibly have been mistaken as to the species. I know both the Stoat and Weasel too well to mistake the one for the other, and, had I been aware at the time of the existence of any doubt on the subject, I could easily have shot and forwarded the specimen."

Thus the matter stands; and we can only express a hope that, having here brought together such scanty information as is at present available, some of our naturalist friends in Ireland will seriously give attention to it, and help to set at rest more completely this much-vexed question.

In Scotland the Weasel appears to be generally distributed, and Bell mentions one received from the extreme north. In the summer of 1892, when accompanying the Committee appointed by the Board of Agriculture to enquire into the plague of Field Voles on the lowland sheep farms, we found that the Weasel was well known to most of the farmers, shepherds, and gamekeepers, in the counties of Roxburgh, Selkirk, Dumfries, and Kirkcudbright, and its extreme usefulness in killing the Short-tailed Field Vole was generally admitted.

Messrs. Harvie-Brown and Buckley include it in the 'Fauna of Sutherland and Caithness' (p. 77), where it is stated to be not so common as the Stoat, and not ascending the hills to any great altitude, preferring the proximity of houses and farmyards. In Caithness the two species are looked upon as the same animal, and both receive the local name of "Whitteret" or "Futteret." The last-mentioned authors, also, in their 'Fauna of Argyll and the Inner Hebrides,' refer to the Weasel as being generally distributed and common over most of the mainland, but absent from the Isles, in which all "returns of vermin killed" may be held entirely to apply to the Stoat. On the mainland Weasels were reported as travelling in companies, reaching new grounds in either large family parties or several families joining forces, and sometimes twenty or thirty might be trapped in a succession of nights at the same spot.

The late Edward Alston, at p. 12 of his 'Report on the Mammalia of the West of Scotland,' remarked that the Weasel is

absent from all the Western Islands with the exception of Islay, but even there the fact of its occurrence has not been confirmed by the enquiries instituted by Messrs. Harvie-Brown and Buckley. In Skye, nevertheless, it appears to be well established. Mr. H. A. Macpherson, who is familiar with that island, has seen it trapped in a district where it is more numerous than the Stoat.*

In Shetland, according to tradition, the Weasel is said to have been introduced many years ago, out of revenge, by a falconer "who had been denied his hawk-hens."†

In Orkney, on the other hand, Messrs. Harvie-Brown and Buckley, in their 'Vertebrate Fauna of the Orkney Islands,' have not been able to adduce any evidence of its existence.

In the accompanying plate (Plate IV.) we give a portrait of the little Harvest Mouse (*Mus messorius*), which in the corn-lands of England, particularly in the South, often falls a prey to the Weasel. In a future number we propose to give some account of it.

ON THE ATTITUDES OF A LITTLE BITTERN OBSERVED IN CAPTIVITY.

BY A. F. GRIFFITH, M.A.

(PLATE III.)

A YOUNG male of the Little Bittern, *Botaurus minutus*, was caught alive on the morning of Sept. 3rd, in a stable at Hove, on the outskirts of Brighton. It was first seen about daybreak flying round an enclosed yard. Later on it was observed sitting motionless in a stable which leads out of the yard, and was there caught, after causing its captor some misgivings from the uncanny way in which it kept its long neck, head, and beak bolt upright, with its bright yellow eyes always turned towards him, but otherwise motionless. When he at last plucked up courage to lay hands upon it, it lunged out viciously with its beak against his hand. He then took it to Messrs. Pratt & Son's, where I saw it the same afternoon.

We placed the bird under a large glass shade, where we could observe its movements at very close quarters. First it stretched out its left wing downwards to touch the ground, craning its long

* Cf. 'Zoologist,' 1884, p. 381.

† Cf. Sibbald's 'Zetland,' p. 22; Low's 'Fauna Orcadensis,' p. 29; and Baikie and Heddle, 'Hist. Nat. Orcadensis,' p. 11.

neck to its full length, sometimes directly upwards, sometimes swaying it forward or sideways, sometimes stretching it out, still at full length, and inclined downward, till the tip of the beak just rested on the ground. In all these movements the head and beak were kept in a nearly continuous straight line with the neck when the latter was extended. Then it would sink down with its long neck folded against its breast, and its head and beak directed straight upward, in which position the "ruff" of feathers on the throat formed a smooth, regular, keel-shaped projection from chin to breast. Directly we put our faces near it, it gave a vicious lunge straight for an eye, which made us glad of the intervening glass. But though it could never resist such an opportunity, it would not, while I was there, trouble itself to attack a finger or hand held out toward it.

To thoroughly appreciate the eerie look of the bird, it was necessary to look *up* at it from underneath while its head was stretched straight up. Its bright eyes with their light yellow irides glared down straight at me in a most unaccountable way, and as I moved to one side or the other, its throat and eyes seemed automatically to turn facing me, so that I could somewhat sympathise with any wretched young frog or other prey that, in a similar position to mine, might try to steal away unobserved.

The tarsi were usually inclined upward and backward, and the bird appeared sometimes to rest with the proximal ends of the tarsi on the ground. The toes have a most remarkable prehensile power, and when Mr. Pratt took the bird in his hand, it curled its hind toes up so that the point of each not only touched the base, but actually curled half-way up upon itself in a most extraordinary way. It sat firmly on the perch of a Blackbird's cage, in which it was placed when first caught, and closed its hind toe firmly and closely round the tape which formed the fastening of the birdstuffer's apron.

The attitudes were so remarkable that I prevailed on Mr. Pratt to allow me to have it photographed; and though it was 6 o'clock in the evening, and there was none too much light, his neighbour Mr. Norman managed to get a few striking portraits, two of which (reproduced in Plate III.) may interest your readers. Allowance must be made for lack of daylight and other difficulties, but the drawings give a very fair idea of two of the most grotesque attitudes indulged in.

The second figure, showing the bird with its beak resting on the ground, does not do full justice to the efforts of the bird to be peculiar. When free to do so, it stretched out its neck at full length, resting the tip of its beak on the ground and looking for all the world like a half-fallen and rotting stump of a bush. But on this occasion it was too near the glass to be able fully to extend its neck, and the waning light compelled us to be satisfied with that position.

I may add that both this bird and the Baillon's Crake reported last month (p. 427) have been purchased by Mr. Henry Willett, of Brighton, and presented by him to the Booth Museum, in which the collection of birds is being gradually extended, care being taken to case all additions in a manner worthy of the original collection, and yet to distinguish them from the cases prepared under Mr. Booth's personal direction.

[The inference to be drawn from these remarks is that the curious attitudes adopted by this bird, on finding itself observed, are assumed in the exercise of what may be termed the instinct of self-preservation, and in a state of nature must tend materially to favour its concealment. Whether it be standing in or near a reed-bed, erect, with neck preternaturally elongated and beak pointed upwards (as in fig. 1), or crouching (as in fig. 2) against a river-side tree-stump, the attitude is calculated to deceive the eyes of all but the keenest observers, especially since the colour of the bird's plumage harmonizes in a remarkable degree with that of the natural surroundings.

A similar habit has been observed and described by Mr. W. H. Hudson (Proc. Zool. Soc. 1875, p. 629) in the case of a South American Little Heron, *Ardetta involucris* (Vieillot), which frequents the borders of the La Plata, and is occasionally found in the reed-beds scattered over the pampas. Without the aid of dogs it was found impossible to secure any specimens of it, even after marking the exact spot where one had alighted. "This," says Mr. Hudson (*l. c.*), "I attributed to the slender figure it makes, and to the colour of the plumage so closely resembling that of the withering yellow and spotted reeds always to be found amongst the green ones; but I did not know for many years that the bird possesses a marvellous instinct that makes its peculiar conformation and imitative colour far more advantageous than they could be of themselves." He then describes, in a very graphic manner, the attitude assumed by one of these birds, which he had marked down, but which for a quarter of an hour he was quite unable to see, "for he was perched, the body erect and the point of the tail touching the reed grasped by its feet; the long, tapering, slender neck was held stiff, straight, and vertical; and the head and beak, instead of being carried obliquely,

were also pointing up. There was not from the feet to the tip of the beak a perceptible curve or inequality, but the whole was the figure (the exact counterpart) of a straight tapering rush; the loose plumage arranged to fill inequalities, the wings pressed into the hollow sides, made it impossible to see where the body ended and the neck began, or to distinguish head from neck or beak from head. The entire under surface of the bird was thus displayed, all of a uniform dull yellow like that of a faded rush." We quote here only a small portion of Mr. Hudson's description, which is too long to be given *in extenso*, but it deserves to be read in its entirety by all those who delight in the out-of-door study of birds, and admire such traits in their habits as are here described.—ED.]

NOTES AND QUERIES.

MAMMALIA.

Habits of the Otter.—I have just read in 'The Zoologist' the interesting article, by the Editor, in which he alludes to the "Otter-slides" of North America. These, he tells us, are made and used by the Otters for sliding down the snow-covered slopes of hill-sides for the same reason that boys make a toboggan-slide, that is, simply for the purpose of enjoyment and fun. Incredible as the statement may appear, from the evidence adduced there can be no reason for doubting the truth of it. Of course, English Otters have not such opportunities or facilities for enjoying a quiet slide as their American cousins, otherwise it is probable that they might occasionally indulge in the same pastime. I have been told of an "Otter-slide" down a soft muddy bank in Wensleydale, but have not heard whether it has ever been used for recreation. Most probably it is utilised as the quickest way of evading pursuit. It is beyond doubt that when an Otter is suddenly disturbed on the top of a snow-covered slope near the river, it will glide down so cunningly and quickly that it is rarely seen. Several times I have been in close proximity to an Otter, and in spite of my sharp look-out it has contrived to sneak down to the river unobserved. I could relate several curious occurrences of this kind, but one will suffice. A few years ago, after a fresh fall of snow, I was walking along the banks of a frozen pool, about thirty feet distant from the river Yore, with a steep slope between, when I noticed a hole broken through the ice, which was of considerable thickness, and at the same time saw a coarse fish, partly eaten, laid near the edge of the ice. After satisfying myself that it was the work of an Otter, I turned round and then discovered that the animal had been concealed under some snow-covered branches close by, and whilst I was examining the spot it, had taken advantage of

my back being momentarily turned and glided down to the river, leaving a furrow behind resembling that which would be made by a small barrel going down endways. No traces of the pads were visible down the slope, but at the edge of a fringe of willows by the river side, the four feet had been used as a stop-brake to arrest its headlong course. In conclusion, I may add that I have several times noticed places where an Otter has left the river to enjoy a good roll on the sand, and also during winter time amongst the snow. I can recollect this district having been hunted by nine different packs of hounds, and the heaviest Otter that has been killed within a period of about fifty years weighed, I believe, 29 lbs. Mr. Wilkinson, of Neasham Abbey, is the present popular Master of Otter-hounds which hunt the river Yore and its tributaries in this locality.—JAMES CARTER (Burton House, Masham, Yorkshire).

Gestation of the Badger.—In an article on the Badger which appeared in 'The Zoologist' for 1888, some statistics were furnished on this subject (pp. 12, 13), which tended to prove that the usual or average period of gestation in this animal is twelve months, though, from some cause as yet unexplained, it has in several cases been prolonged much beyond this time. It may be as well to note, as a further item of information on the subject, that a female Badger which was captured alive in *Spain*, and brought home to this country by Mr. Assheton Smith, of Vaynol, in the month of February, gave birth in the February following to two young ones, as nearly as possible twelve months after her capture. This animal, although apparently an adult female, looked to me smaller than the general run of English Badgers, but in other respects resembled them.—J. E. HARTING.

Rabbit breeding above Ground.—On Oct. 3rd I was out shooting, when a Rabbit got out of a tuft of grass, was shot at, and missed. In the seat which she had left, we found six young ones, about three days old. The following day I went to look at them again, but they had been removed. Is not this very unusual?—A. C. SPENCE (Kilnwick Hall, near Hull).

[Instances in which young Rabbits have been found born above ground are not common; nevertheless several have been reported. In 'The Field' of Dec. 2nd, 1876, a case is mentioned by Mr. W. Southam, of Durrington, near Amesbury, in which a flat "form" like that of a Hare was found in turnips, and contained four newly-born young. The old doe was unfortunately shot as she left the form, before it was discovered (Zool. 1877, p. 18). Mr. Cordeaux also has reported ('Field' of Dec. 9th, 1876) a nest of four young Rabbits, a few days old, out in a bare fallow field. In this case, although the hollow in which they lay was bedded with down, there was no covert or shelter of any kind around it. In the succeeding

number of 'The Field' (Dec. 16th) a still more curious case is mentioned by Mr. Hardy, of Burley-on-the-Hill, Oakham, who states that a nest of five young Rabbits was found inside an old bag stuffed with straw which had been used as a scarecrow, and had fallen to the ground.—ED.]

BIRDS.

American Red-breasted Thrush in Leicestershire.—Agreeably to your request that I should furnish some particulars of the occurrence of *Turdus migratorius* in Leicestershire, to which I referred in my last letter, I have much pleasure in telling you all I know about it. The bird in question was captured near Leicester, in October, 1893, whilst in company with a flock of Redwings. Being in beautiful plumage, it was kept alive by the man who caught it, and soon became pretty tame. During the succeeding winter it came into the possession of my father-in-law, Mr. Jacob, of Royal Cliff, Sandown, Isle of Wight, and has ever since been kept in excellent health and feather. I have often seen it myself, and can answer for the particulars above given.—H. M. LANGDALE (Compton, Petersfield).

[This makes the third reported instance of the occurrence of *Turdus migratorius* in England. See Zool. 1877, p. 14; and 1891, p. 219.—ED.]

On the Recent Occurrence of the Yellow-browed Warbler in Yorkshire and Norfolk.—The attention which of late years has been paid to the smaller migratory birds during their autumnal migration has led to the discovery that several species which have been long regarded as rare stragglers to England are most likely annual summer visitors; their small size and unobtrusive colouring causing them to be generally overlooked. Amongst these may be named the Marsh Warbler, *Acrocephalus palustris*, the Barred Warbler, *Sylvia nisoria*, the Icterine Warbler, *Hypolais icterina*, and the Yellow-browed Warbler, *Phylloscopus superciliosus*. The last-named species has been met with in two localities during the past autumn, and it will be well to place the fact on record in the pages of 'The Zoologist' for future reference. On Oct. 8th, Mr. Swailes, an observant nurseryman, at Beverley, hearing the note of a small warbler which was unfamiliar to him, shot the bird, and sent it for identification to Mr. F. Boyes, who pronounced it to be *Phylloscopus superciliosus*, and on communicating this information, Mr. Swailes found and shot two others in the same locality. Mr. Boyes having reported this interesting occurrence in 'The Field' of Oct. 27th, Mr. J. H. Gurney, in the succeeding issue (Nov. 3rd), announced that on Oct. 1st one of these little birds was shot on the coast of Norfolk by a labouring man, who fired at it merely for the purpose of unloading his gun! As ten instances of the occurrence of this species in the British Islands have now been made known, its claim to be

regarded as a British bird, which for a quarter of a century remained doubtful, may now be said to be established. In appearance it might be mistaken for a Goldcrest, *Regulus cristatus*, but, as observed by Mr. Caton Haigh (Zool. 1892, p. 413), may be detected by "its quick and even flight and brighter colour." Moreover, there is a double bar of pale yellow across the wing-coverts and a white superciliary streak, which suggested the specific name. Its true home is apparently in Siberia, where Mr. Seeböhm found it breeding, in the forest between the Yenesei and the Koorayika. The nest, a semi-domed one, was on the ground in a tuft of grass, composed of dry grass and moss, lined with reindeer-hair, the eggs resembling those of the Willow Warbler, *Phylloscopus trochilus*.—J. E. HARTING.

Breeding of the Saffron Finch (*Sycalis flaveola*) in Confinement.—For some years past I have from time to time attempted to breed Saffron Finches. It is generally supposed that these birds are easy to breed, yet, until the present year, I was never successful; until the winter of 1892–3 they never showed any inclination either to nest or to lay. Last year I turned loose a hen of Pelzel's Saffron Finch, with two males and a female of the common species, in my Weaver-aviary; and this year I purchased another pair, and turned them into a large flight-cage. In the aviary I hung up some large boxes (somewhat after the pattern of sentry-boxes), and in the cage I hung up a cigar-box, perpendicularly, one-third of the lid being removed from the upper end, and the other two-thirds nailed down. The hen bird in the cage began to sit early in May, the first young bird leaving the nest on June 8th, and two others on the following day. These young birds, bred from pure Saffron Finches, were greenish grey above, with black centres to the feathers, the throat yellowish, the breast clear yellow, the chest, abdomen, and vent white. A day or two later I heard young birds in one of the boxes in my Weaver-aviary, and on July 14th the first young bird left the nest, followed on the two succeeding days by two others. The latter were altogether duller and darker birds than those bred in the cage, showing no yellow on the breast; I suspect them to be a cross between *S. flaveola* and *S. pelzelni*, but as all four adult birds fed them, it was difficult to decide as to their parentage, though they seemed to follow the hen of Pelzel's Finch more than that of *S. flaveola*. Meanwhile, in the cage, the parents began to chase their youngsters, and therefore I removed the latter, when I discovered that their mother had already laid again; so that it was impossible to clear out the nest-box. This time three young birds were carried out dead, and one only left the nest late in July. Finches seem to object to bringing up single youngsters; consequently the male bird alone fed this fledgling, and at the end of a week he began to persecute it. I removed it at once, and placed it with the three others of the previous nest; but, when I went to clean out the nest-box, I found the

hen sitting, so I foolishly left her alone, the result being that all the young ones died. In August the pair in the bird-room again had a nest, for the safety of which I became somewhat alarmed, when I saw the young birds of the preceding nest following their parents into the box; but, upon sitting down and examining them attentively with a pair of opera-glasses, I ascertained that they were assisting to feed their younger brethren. This they did regularly until three more left the nest. Of the four young birds in the cage, three died; and I soon discovered that, when closely confined, they quarrel a good deal, plucking one another on the nape and flanks. In the bird-room, though they constantly pursue one another there is no plucking, and the exercise, which is extremely vigorous, seems to do them good. On the death of the third family in the flight-cage, I immediately took out the box, and replaced it by a larger and cleaner one, ramming a quantity of new hay into the bottom, and supplying the birds with feathers, moss, and cow-hair. A fourth lot of youngsters can now be distinctly heard (Sept. 26th), and will probably leave the nest early in October. There seems to be a prevalent notion that Saffron Finches build like Sparrows, but this is quite a mistake; the nest, though built in an enclosure, is a tolerably neatly formed saucer-shaped structure upon a thick foundation of hay and rubbish. At times the foundation is piled up nearly to the top of the box, leaving only just room for the parents to creep over the top; at other times it is quite deep down, so that, when feeding, the birds have to jump down into the enclosure. Like all *Fringillinae*, Saffron Finches feed from the crop, and my young birds have all been reared on a mixture of potato, bread-crumbs, preserved yolk of egg, ants' cocoons, and Abrahams' food, together with canary, millet, and paddy-rice. At first the old birds feed them chiefly on the soft food, but as the nestlings grow, they also eat a good deal of seed, more especially the paddy and canary-seed. Male and female feed alternately, each waiting until the other has emptied its crop before entering the nest. In the bird-room the fledged young torment their parents to feed them for about three weeks, though at the end of a week they are well able to cater for themselves. As is well known, the eggs are short ovals, more spherical than those of a Sparrow, though somewhat like boldly-marked specimens of the eggs of *Passer* in character. The hen alone incubates, fourteen days. Number of eggs generally four to five; in most cases I had four hatched, but only three reared. In captivity *Sycalis* appears to have no settled breeding season like *Serinus*, but, if permitted to do so, will rear brood after brood throughout the year; five nests in a year are not unusual. Young Saffron Finches are well able to fly when they leave the nest, and on the second day their flight is tolerably strong, though not sustained; in a week they are as rapid on the wing as their parents.—A. G. BUTLER (Beckenham).

BATRACHIA.

The Movements of the Frog. — An extremely ingenious working model of a Frog has just been submitted to us by Messrs. Herbert Crossley and Theodore Birnbaum, the inventors and patentees. It is life-size, composed of inflatable india-rubber, and coloured to resemble a living animal. Connected with it is a long and very slender flexible india-rubber tube, terminating in a small rubber-ball which is held in the palm of the hand. On placing the frog on the ground or in the water and applying pressure in jerks to the india-rubber ball, air is forced into the hind limbs, which are thereby extended in the most natural manner, and cause the body to move forward. By placing it on a convenient ledge the frog may be made to dive into the water. It will remain and swim below the surface by using slight pressure, which should be sharply removed at each stroke. In this way the operator is able to produce the most life-like movements at any desired rate of speed, and so study them at leisure. We are informed that the "automatic swimming frog," as it is termed, will soon be procurable at all the principal toy-shops in the metropolis.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 1st, 1894. — Mr. C. B. CLARKE, F.R.S., President, in the chair.

Messrs. Arthur P. Green and F. Lewis were elected Fellows. Mr. Alexander Whyte was admitted.

Messrs. H. and J. Groves exhibited an undescribed *Chara* from Westmeath, and made remarks upon its peculiar mode of growth.

Mr. J. O. Tepper exhibited photographs of a new and remarkable Fungus from South Australia, *Laccocephalum basilapiloides*, which explained the formation of the peculiar stone-like nodules occasionally found when clearing scrub-land. These were found to be due to the agglutinating nature of the mycelium of this fungus, the grains being permanently cemented by lime and ferruginous oxides.

The Rev. G. Henslow made some remarks on a peculiar mode of propagation of *Oxalis cernua*, observed in Malta, and exhibited some views taken during his sojourn there.

Mr. Miller Christy exhibited a long piece of leaden pipe which had been gnawed through its entire length by rats, in a manner which showed that the object was not, as generally supposed, to get access to water.

Mr. H. M. Bernard exhibited some photographs of corals taken with the "Kodak" camera.

A series of that remarkable beetle, *Goliathus giganteus*, from West Africa, was shown by Dr. Heath, and Mr. E. M. Holmes exhibited some curious plants from Japan.

On behalf of Mr. A. W. Waters, a paper was then read "On Mediterranean and New Zealand Retipora, and on a fenestrate Bryozoan;" and, on behalf of Dr. J. Müller, a paper "On Lichens in the Kew Herbarium."

Nov. 15th.—Mr. C. B. CLARKE, F.R.S., President, in the chair.

Dr. David Prain was admitted a Fellow.

Mr. J. E. S. Moore exhibited preparations illustrative of his investigations concerning the origin and nature of the achromatic spindle in the spermatocycles of Elasmobranchs. His results were approximately in agreement with those arrived at by Hermann in regard to the corresponding elements in Amphibia, and more in accord with those of Ishikawa relating to the division of Noctiluca. As to the spindle fibres themselves, it appeared that during the diastral stage of the division they were the optical expression of thickenings in the wall of a membranous cylinder stretched out between the chromosomes.

The Rev. G. Henslow exhibited some curious iron implements, of somewhat varied pattern, used in Egypt for cutting off the top of the Alexandrine fig, *Ficus sycamorus*, Linn.; the operation being necessary to render it edible by getting rid of the parasitical insect *Sycophaga crassipes*, Westw., with which it is always infested. The practice was said to be very ancient, being described by Theophrastus, and alluded to by the same word, *κνίζων*, in the Septuagint version of the Old Testament (Amos vii. 14), in translating from the Hebrew.

Mr. H. N. Ridley showed some drawings of the green larva of a Sphinx moth mimicking a green tree-snake, *Trimeresurus wagleri*, as well as a cluster of caterpillars mimicking a fruit, all of which were found in Singapore. He also exhibited a drawing from life of the tan-producing Gambir-plant, *Uncaria gambir*, in flower.

Mr. Thomas Christy exhibited some germinating seeds of pepper, showing the testa being carried up by the cotyledons.

A paper was then read by Dr. D. Prain on the plant yielding Bhang, *Cannabis sativa*, illustrated by lantern-slides.

A paper on the proposed revision of the British Copepoda, by Mr. Thomas Scott, was, in the unavoidable absence of the author, communicated by the Secretary.

ZOOLOGICAL SOCIETY OF LONDON.

November 6th, 1894. — Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President, in the chair.

The President read a letter addressed to him by the late Emin Pasha, containing a diary of ornithological observations made during the last part

of his journey towards the Congo. This letter and journal had been taken from the Arabs on the Upper Congo and forwarded to the President by the Officers of the Congo Free State.

The Secretary read a report on additions to the Society's Menagerie during June, July, August, and September, and called special attention to two fine specimens of the Hamadryad Snake of India and Burmah (*Ophiophagus elaps*; a series of mammals and birds from British Central Africa, presented by Mr. H. H. Johnston, and brought home by Mr. Alexander Whyte; a young male White-tailed Gnu, *Connochates gnu*, born in the Menagerie on June 23rd, being the first occasion of this Antelope having bred in the Society's Gardens; a female Eland of the striped form, *Oreas Canna livingstonii*, from the Transvaal, the first individual of this variety received by the Society; two Giant Tortoises, *Testudo elephantina*, from the Aldabra Islands, presented by Rear-Admiral W. R. Kennedy; a young male Antelope, *Tragelaphus gratus*, bred in the Zoological Gardens, Hamburg, and received July 27th.

Mr. F. E. Blaauw communicated some remarks on the colour of the bill in a living specimen of *Cygnus americanus*.

Mr. R. Trimen forwarded a reply to remarks of Dr. A. G. Butler on his paper on the Manica Butterflies collected by Mr. Selous.

Dr. R. W. Shufeldt sent a correction to his paper "On the Affinities of the *Steganopodes*," recently published in the Society's 'Proceedings.'

Mr. O. Salvin exhibited a pair of the newly described butterfly *Ornithoptera paradisea*, from the Finisterre Mountains, German New Guinea.

Mr. C. D. Sherborn exhibited a copy of, and made remarks on, the recently published reprint of George Ord's 'American Zoology.'

Mr. G. A. Boulenger exhibited a Gecko, forwarded by Mr. R. T. Lewis, which had been captured in winter, fully active, on the snow upon the highest portion of the Drakensberg Range, Natal. It belonged to a genus believed until 1888 to be characteristic of the Australian fauna, and differed from its nearest ally, *Ædura africana*, in the smaller and convex granules covering the head, and in the rostral shield not entering the nostril. Mr. Boulenger proposed for it the name *Ædura nivaria*.

Mr. Martin Jacoby read descriptions of new species of *Ædionychis* and allied genera of Coleoptera.

Mr. W. G. Ridewood read a paper on the hyoid arch of *Ceratodus*. The author instituted a comparison between the ventral elements of the hyoid arch of *Ceratodus* and the basi- and hypo-hyal cartilages of the Elasmobranchii. The relations of the hyomandibular cartilage were dealt with in detail, and attention was called to the wide range of variation which this vestigial cartilage exhibits. Arguments were also adduced to show that there is no connection between the reduction of the hyomandibular in the Dipnoi and its adaptation as a secondary suspensorium in the hyostylic fishes.

Mr. G. A. Boulenger read a third report on additions to the Batrachian Collection in the Natural History Museum, containing a list of the species, new or previously unrepresented, of which specimens had been added to the collection since 1890, and descriptions of some new species.

Mr. R. J. Lechmere Guppy communicated an account of some Foraminifera from the Microzoic Deposits of Trinidad.

The Secretary read some remarks from Sir Walter L. Buller on a Petrel lately described as new by Capt. Hutton under the name of *Æstrelata leucophrys*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

November 7th.—Colonel CHARLES SWINHOE, M.A., F.L.S., Vice-President, in the chair.

Mr. W. P. Blackburne-Maze, of Shaw House, Newbury, Berkshire, and Mr. Bertram George Rye, of 212, Upper Richmond Road, Putney, S.W., were elected Fellows of the Society.

Colonel Swinhoe exhibited a female of *Papilio telearchus*, Hewitson, which he had received by the last mail from Cherra Punji. He said that this was the only known specimen of the female of this species, with the exception of one in Mr. L. de Nicéville's collection, which he had described in the 'Journal of the Bombay Natural History Society' in 1893. He also exhibited a male of the same species for comparison.

Mr. C. G. Barrett exhibited abnormal forms of *Pararge megæra*, *P. ægeria*, *Melitæa athalia*, *Chrysophanus phlæas*, *Charæas graminis*, *Lophopteryx camelina*, *Plusia gamma*, *Cucullia chamomillæ*, *Boarmia repandata* var. *conversaria*, *Cidaria psittacata*, and other species, all collected by Major J. N. Still on Dartmoor, Devon. He also exhibited, for Mr. Sydney Webb, of Dover, a long series of most remarkable varieties of *Arctia caja* and *A. villica*.

Mr. Gervase F. Mathew exhibited seven beautiful and striking varieties of *Arctia villica*, bred from larvæ obtained on the Essex coast, near Dovercourt, in March and April, 1893 and 1894.

Herr Jacoby exhibited two specimens of *Blaps mucronata*, with soft elytra, taken on a wall at Hampstead. The Rev. Canon Fowler and Mr. G. C. Champion made some remarks on the subject of the elytra of immature beetles.

Mr. H. Goss exhibited a specimen of *Periplaneta australasiæ*, received from Mr. C. E. Morris, of Preston, near Brighton. Mr. McLachlan said the species had been introduced into this country, but was now considered a British insect.

Mr. B. G. Rye exhibited specimens of the following rare or local

species of Coleoptera, and gave the names of the localities in which they had been taken:—*Cicendela germanica*, *Eumicrus rufus*, *Triarthron markeli*, *Mezium affine*, *Homaloplia ruricola*, *Anomala frischei* var. *julli*, *Synaptus filiformis*, *Lixus paraplecticus*, *Balaninus cerasorum*, *Asemum striatum*, and *Zeugophora flavicollis*.

Mr. McLachlan exhibited, for Mr. G. C. Bignell, of Plymouth, two new species of Ichneumonidæ, from Devonshire, viz., *Pimpla bridgmani*, Bign., a parasite on a spider, *Drassus lapidicolens*, Walek.; and *Praon absinthii*, Bign., a parasite on *Siphonophora absinthii*, Linné.

Mr. C. O. Waterhouse stated that the *Acridium* received from Capt. Montgomery, and exhibited by Mr. Goss at the last meeting, was *Acridium septemfasciatum*, and he exhibited the species with the wings extended.

Mr. Ridley exhibited a species of a scale insect (? *Lecanium*) found on a nutmeg tree in Malacca, and made some remarks on *Formica smaragdina*, which makes its nest on the trees, joining the leaves together by a thin thread of silk at the ends. The first step in making the nest is for several ants to bend the leaves together and hold on with their hind legs, and one of their number after some time runs up with a larva, and, irritating it with its antennæ, makes it produce a thread with which the leaves are joined; when one larva is exhausted a second is fetched, and the process is repeated.

Mr. Waterhouse read a paper entitled "Some remarks on the Antennæ of Insects." A discussion followed, in which Messrs. Champion, Jacoby, McLachlan and Gahan took part.—H. Goss and W. W. FOWLER, *Hon. Secretaries*.

NOTICES OF NEW BOOKS.

A Reprint of the 'North American Zoology' by GEORGE ORD. Originally published in the second American edition of 'Guthrie's Geography,' 1815: taken from the Author's own copy; with an Appendix by SAMUEL S. RHOADS. 8vo, pp. i—x; original title; pp. 290—361; Appendix and Index, pp. 1—90. Haddonfield, New Jersey. 1894.

THE name of George Ord, from his association with Alexander Wilson, and as an early writer on North American Zoology, is tolerably familiar from citation by subsequent authors; but the publication on which his fame chiefly rests is of such rarity that we have never seen a copy in this country, and have heard of only

two which are preserved in America. Why it should be so rare we cannot say, unless the bulk of the edition was perhaps destroyed by fire. At any rate original copies are now quite unprocurable, and we are indebted to Mr. Rhoads for enabling us to estimate its scientific worth by means of an exact reprint which he has just issued. As to the history and nature of the work, a few words of explanation seem necessary.

In 1794-95 was projected and published, in Philadelphia, a sort of General Gazetteer, or geographical, historical, and commercial Directory, which, having too long a title for general quotation, came to be known as 'Guthrie's Geography.' Between the date of the original edition and that of 1815, to which George Ord became a contributor, there appeared (in 1814) an important publication entitled "A History of the Expedition, under the command of Captains Lewis and Clarke to the sources of the Missouri, thence across the Rocky Mountains, and down the River Columbia to the Pacific Ocean: Performed during the years 1804-5-6: By order of the Government of the United States." Ord having examined the zoological collections brought home by these explorers, and having named a number of species which appeared to him to be new, or undescribed, or to require naming, was induced to publish the results in an article on the Zoology of North America in the new edition of 'Guthrie's Geography' which appeared in 1815. His name was not appended to this, a prefatory note from the publishers explaining that "the modesty of the author forbids a personal acknowledgment which the editors would have the highest satisfaction in making."

Only through the recognition of his associates, and in a great measure owing to the citations by Prof. Spencer Baird in his work on the Mammals of North America, is the scientific world enabled (as Mr. Rhoads puts it) "to accord to the author of 'Ord's Zoology' the honour and distinction which he humbly sought to avoid."

Such, briefly speaking, is the history of the work. The scientific value lies in the lists of Mammals (pp. 291-92) and the observations upon them (pp. 293-313); Birds (pp. 313-356); and Amphibia (pp. 357-360); with a few remarks on Fish and Insects (pp. 360-361), none of which are given in any other edition of 'Guthrie's Geography.'

Looking casually through the volume, we are inclined to think that its value has been perhaps a trifle overrated.

Extracts are very properly given from the Report of Lewis and Clarke, but there is also much compilation from the writings of Wilson, Brackenridge, Umfreville, Pike, Lawson, Pennant, and others. In other words, there is a lack of originality about the work. The classification adopted is that of Turton's edition of Linnæus, but there is no attempt at scientific descriptions, even of species to which for the first time he gives scientific names. These names are not always restricted to new species, and sometimes even (as in the case of the Louisiana Marmot) are bestowed at a venture upon species of which he had apparently seen no specimens.

But in noting these shortcomings, upon which we do not desire to lay undue stress, allowance should be made for the difficulties which must have attended the preparation of such a work eighty years ago. Taking this into consideration, it must be admitted that George Ord, according to his lights, rendered good service to zoological science, and in future, whenever it may become necessary to test the value or particular bearing of any of his observations, we shall be able, thanks to Mr. Rhoads, to refer at once to his exact words without fear of misquotation.

Allen's Naturalists' Library. Edited by R. B. SHARPE. *A Handbook to the Birds of Great Britain.* By R. B. SHARPE. Vol. I. Post 8vo., pp. i—xxii; 1—342. With 31 coloured plates. London: W. H. Allen & Co. 1894.

THIS is the first of a new series of volumes on general zoology, which has been planned, apparently, to enable the publishers to use up the old plates of 'Jardine's Naturalists' Library.' That work appeared fifty years ago (1833-43) in forty volumes, and for many years later undoubtedly served a very useful purpose. Every one is familiar with it; but it is now hardly ever referred to, for the simple reason that it is "out of date." The study of Zoology, like that of most other subjects, is progressive; and since Jardine's deservedly popular work appeared in a second edition (1846-66), the discoveries by naturalists abroad, and the researches of those at home, have completely revolutionised many of the views that were put forth at the date referred to.

In our humble opinion the publishers should have remembered that "art" also is progressive; and to issue as specimens of book-illustration, in 1894, plates that passed muster in 1844, is a retrograde step which is much to be deplored.

To re-issue the text, also, with no more alterations than might be necessary to bring it fairly up to date, sounds well in theory, but in practice would be impossible. The changes in classification and nomenclature, the discovery of new species, the extension of knowledge on the subjects of distribution, migration, seasonal changes of colour, and even, in some cases, of structure, *e.g.* in the Puffin, would render any such attempt futile. There was obviously nothing for it but to re-write the text *de novo*, and this it has been decided to do.

At the outset we take exception to the title. In the old days the name of the serial was associated with the name of the editor, not that of the publisher. Why has this proper order of things been reversed? To the term "Handbook" we object for two reasons: first, because it is "preoccupied" in relation to 'British Birds'; and secondly, because—the work being in more than one volume—the term is strictly speaking inapplicable. However that may be, the title is now published, and we have to deal with the work as we find it. Whether it was wanted at all is a question on which we have some doubt; for it seems to us that in the fourth edition of Yarrell, so admirably elucidated and improved by Prof. Newton; in the excellent 'Manual' by Mr. Howard Saunders; and in the extensive field-notes and beautifully coloured plates in Mr. Seebohm's work, the modern student of Ornithology has practically all that he can possibly desire or wish for in the shape of text-books. Dr. Sharpe's new volume, if it teaches us anything, teaches us to unlearn much that we knew before, and to commit to memory a new scheme of classification and much new nomenclature. To this, on the score of needlessness, we very much object.

Linnæus (for whose nomenclature Dr. Sharpe very properly professes reverence), in arranging his Orders of Birds, commenced with the *Accipitres*, or birds of prey. In this he has been followed, for more than a century, by the leading ornithologists of England, France, and Germany, to say nothing of other nations. Some five-and-twenty years ago the tide turned; Prof. Huxley proposed a new scheme of classification, based upon the form of the palatal

bone;* this was adopted, with modifications, by Dr. Sclater, in 1873,† and followed by a Committee of the “British Ornithologists’ Union,” which, ten years later, was formed for the purpose of drawing up an authoritative ‘List of British Birds.’ In this classification (followed also in the ‘List of Vertebrate Animals living in the Zoological Society’s Gardens,’ and other works) the scheme commences with the Order *Passeres*, and the first birds on the list are the Thrushes.

A few years later (1886) a Committee of American Ornithologists issued an authoritative ‘Check List’ of North American Birds,‡ in which the Order *Pygopodes*, or Diving-birds, stands first, headed by the Grebes; and this, of course, has been followed by subsequent American writers. In commencing the new edition of Yarrell’s ‘British Birds,’ Prof. Newton saw no reason to depart from Linnæus’s lead, in which we quite agree. Messrs. Seeböhm and Saunders, on the other hand (with proper consistency we must admit), follow the classification which, as members of the B. O. U. Committee, they helped to make and promulgate. Dr. Sharpe, who in 1874 commenced the famous ‘Catalogue of Birds in the British Museum’ with the *Accipitres*, has since altered his views, and, cutting adrift from both the A. O. U. and the B. O. U. (that is to say, in the matter of classification and nomenclature), now steers a new course, which starts from the Crows!

In his prefatory remarks on the Order *Passeriformes*, section *Oscines* or Singing-birds (in which, *prima facie*, it seems very ironical to place the Crows), he observes:—

“The structure of a Raven or a Crow presents as complete an equipment as one can imagine a bird to require—a powerful bill with well-developed nasal plumes, a compact and regular plumage, strong wings and tail, with every series of wing-covert beautifully patterned, and, lastly, powerful feet and claws, with every scale distinctly indicated.

“The Crows, therefore, have a right to be placed at the head of the *Oscines*, in preference to the Thrushes, which excel them only in singing, beauty of voice being a feature to which the Crows can lay no claim.”

* Proc. Zool. Soc. 1867, p. 415.

† ‘Nomenclator Avium Neo-Tropicalium,’ 1873. See also ‘The Ibis,’ 1880, pp. 340—350; 399—411.

‡ ‘The Code of Nomenclature and Check List of North American Birds adopted by the American Ornithologists’ Union’ (New York, 1886).

This appears to us illogical; for, surely, at the head of the Singing-birds should be placed those which "excel in singing," unless Dr. Sharpe would begin at the other end of the scale in the order of merit, and commence with those species which do not sing at all, and end with the Thrushes, which sing splendidly. But this he does not do; for we find the Thrushes interpolated (pp. 241—303) between the *Sylviidæ* and the *Accentoridæ*, a "family" which, with all due deference, we consider unnecessary. The position we have always taken up is that, "flight" being the chief characteristic of birds as distinguished from every other class of vertebrate animals, we should place at the head of any scheme of classification those forms in which "flight" is most highly developed and perfected, namely, the birds of prey, which are able to overtake and capture any other species when brought into competition with it on the wing. Thus the highest type of bird, from our point of view, is to be found amongst the long-winged Falcons, which have the additional merit of possessing the highest degree of intelligence amongst birds.

As to nomenclature, we are perfectly aghast at the changes proposed by Dr. Sharpe. To take the genus *Corvus*, for example, he will only allow it to include (so far as Great Britain is concerned) a single species, *corax*. The Rook he would call *Tryphanocorax frugilegus*, the Crow *Corone corone*, the Jackdaw *Coleus monedula*, and so forth. This, as it seems to us, is carrying differentiation much too far, and needlessly so; for surely all these birds have sufficient points of resemblance to justify their being grouped together, for all practical purposes, in one and the same genus.

This brings us to another point. We utterly dissent from the proposal to give the typical species of a genus the same name as that of the genus, as Dr. Sharpe has done in the case of *Corone corone*, *Pica pica*, *Graculus graculus*, *Cannabina cannabina*, and a host of others. The adoption of such a course is to destroy the whole value of the binomial system, and, as it seems to us, is indefensible. We are told that it is justified by Linnæus himself, who has described the Common Mackerel under the name of *Scomber scomber*. But if this be the only justification that can be pleaded, it may be at once dismissed by a very simple explanation. What Linnæus wrote and intended to have printed in this case was *Scomber scombrus*. This is proved by his own

interleaved copy of the twelfth edition of the 'Systema Naturæ' (1766),—the last published in his lifetime,—which is preserved in the library of the Linnean Society. In this copy we find the necessary correction of the specific name from *scomber* to *scombrus*, showing clearly that he had no intention of taking the course upon which Dr. Sharpe and others now insist. The sooner, therefore, this misapprehension is removed the better for future students of Ornithology.

As to the information given in regard to the occurrence of the "rarer visitors" to Great Britain, we do not find it so complete or detailed as it should be in a new book on British Birds; but possibly this may be due to the exigencies of space, and the wish of the publishers to condense as much as possible, having regard to the number of volumes which the series is to contain. The old plates, many of which are misplaced, we never admired; the figures are flat and the outlines hard. The few new ones by Mr. Keulemans which have been introduced are far superior, and the old ones lose in merit by comparison. Instead of figuring a number of well-known species with which every one is more or less familiar, we should much have preferred to see the outlay expended upon the delineation of certain less-known species, such as *Phylloscopus superciliosus*, *Hypolais icterina*, *Sylvia nisoria*, *Anthus cervinus*, *A. campestris*, and *A. Richardi*, *Emberiza pusilla*, *E. rustica*, and *E. cioides*, *Alauda brachydactyla*, *Fringilla serinus*, *F. canicapillus*, and others. It is true that good figures of these may be found in other works, but that is the case of course with all the rest, and were we to adopt this plea we might dispense altogether with illustrations.

It is far from our intention to disparage what Dr. Sharpe has written. His long experience as an ornithologist, having considerable knowledge of the birds not merely of Great Britain but of the world, gives great weight to his words; but it is precisely on account of his authority that we venture, in all friendliness, to protest against certain portions of his teaching, as being indefensible in principle, and calculated to retard rather than advance the study of Ornithology.





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